TRAVELLING Philadelphia way recently with a molder —who has built up an enviable reputation—we commented upon machinery. This man agreed that his industry is 80% under equipped, and amplified his remarks into "half the intricate molded pieces you see are only show pieces. None of our present machinery could stand continuous production of these elaborate display parts—"and a pre-echo comes from another friend who said three months ago, "Five years from now we will look on the present mechanical equipment as antiquarian."

WHILE talking about men who "mold their own," we congratulate both Mr. Kurz and Mr. Schlesinger on their reelection as given in the leading article of MOLDED PRODUCTS. Their work toward unity has been most instrumental in the successful launching of these trade practice rules, and we trust that their efforts this year will obtain the added support so necessary for the completion of this undertaking. We know of no other men who are more naturally fitted to be industrial leaders, nor who have so superbly radiated this quality during the past year.

WE present this month a second article by Mr. William Gordon. His last contribution occasioned such widespread comment that we could not refuse requests for more such material, and Mr. Gordon again obligingly drew from his bag of experiences. He has been a successful merchandiser, advertiser and manufacturer; presenting the Masterlite line of Molded Specialties has been his hobby as well as his business. These two articles are based upon established policy that has proved successful in his own selling, and are presented especially for the consideration of the distributor. It is also an auspicious season for such editorial matter and is only one of many such contributions from other well known men who have had sound merchandising experiences.

The Publishers.

PLASTICS & MOLDED PRODUCTS

A periodical devoted to the manufacture and use of plastic and composition products

Vol. 5 NOVEMBER, 1929 No. 11

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Publication Office: Washington, N. J.

Offices: 114 E. 32nd St., New York Telephones: Caledonia 5524-5525

Plastics Publications, Inc., Publisher

Advertising Representatives

R. C. Gilmore, Jr., 114 East 32 Street, New York City

England: Willing Ltd., 362 Gray's Rd., London, W. C. I.

Continental Europe: The A. D. S. Service, Berlin, Germany

Subscription Price—U. S. $3.00, Foreign $4.00 Per Year Issued Monthly—35 cents a copy

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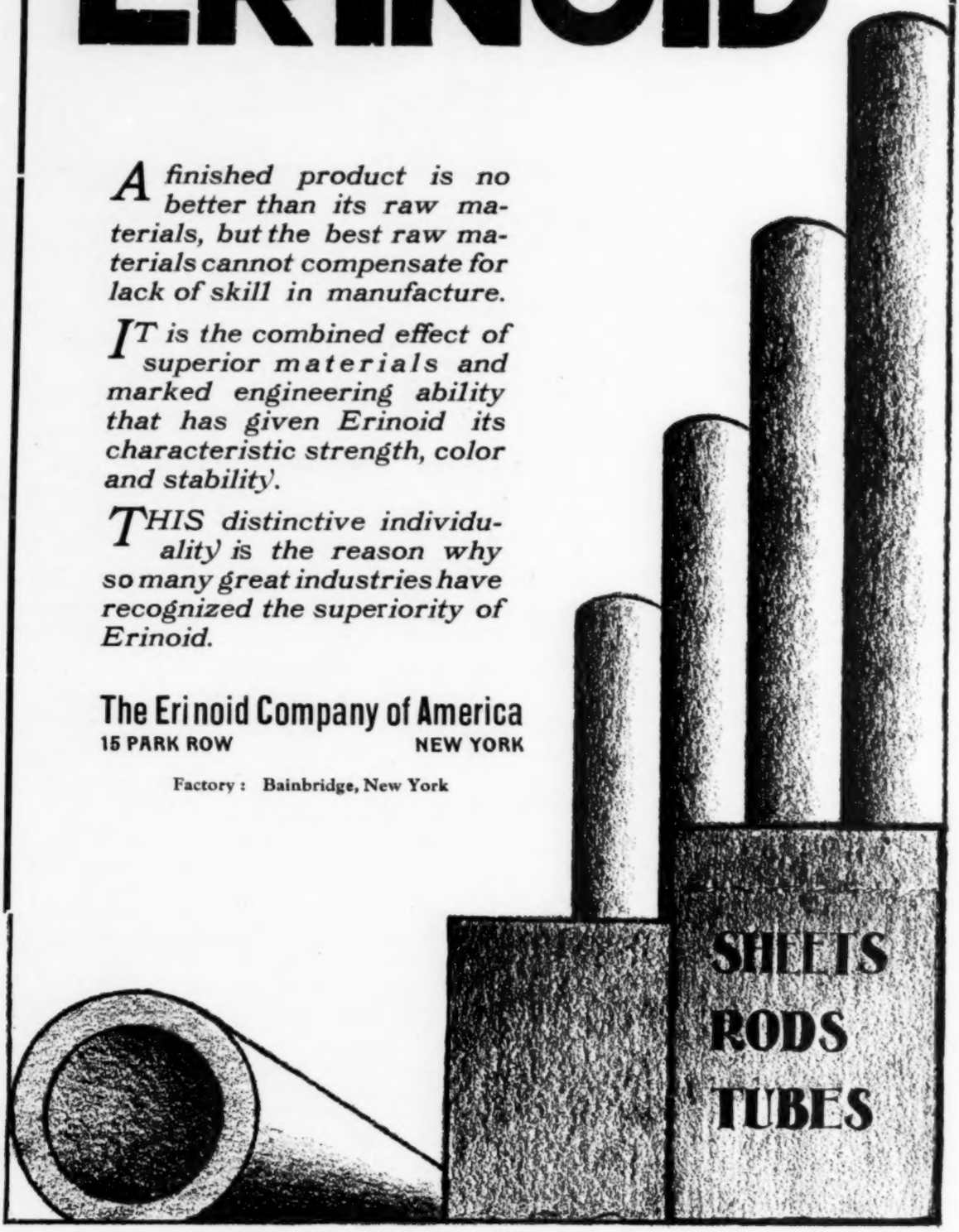

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PLASTICS

A periodical devoted to the manufacture and use of plastic and composition products

Vol. 5 NOVEMBER, 1929 No. 11

Thermoplastic Rubber Compositions Combined With Cellulose Fibers

Shellac-like products prepared from rubber and hard rubber adapted to rapid molding followed by subsequent hot curing

Compiled from recent patents by Carl Marx

THE older types of rubber composition usually required a considerable time for vulcanization. Modern production methods demand shorter times in the molds. The active competition between rubber compositions and the resinoids has had a very salutory effect on the rubber industry, in that it has fostered intensive research. Rubber has so many valuable properties that no prospective user of a special type of molded product can afford to overlook its possibilities.

THE gradual approach of the rubber products to the synthetic resins goes on apace. Many of the compounds depended on for the production of the resinoids are finding application in the preparation of thermoplastic products based on rubber.

In most cases, rubber is either modified by the action of reagents, or by isomerization or polymerization. Among the recent proposals there are three of considerable interest.

Treated With Acid

The first two are controlled by the B. F. Goodrich Rubber Co. U. S. P. 1,705,757; March 19, 1929, (filed April 28, 1925) of William C. Greer and Herbert A. Winkelmann relates of a thermoplastic rubber composition which is obtained by the following method:

Example 1.—A balata-like derivative of rubber is obtained by working into 100 parts by weight of crude rubber 3 parts of pine tar followed by 7 parts of concentrated sulfuric acid (sp. gr. 1.84). The mix is heated, as in an oven, until a pronounced exothermal temperature rise takes place within the mass, the temperature rapidly rising to 200-250° C. In case of the above recipe, heating in an oven at 130° C. for 75 minutes has been found to be sufficient, but preferably the heating two hours after the maximum should be continued for about temperature in the mass has been reached. After cooling, the product is masticated on a warm mill to ensure homogeneity and it is preferably washed free of remaining acid and other water-soluble impurities during that process. The product when freed from all impurities is found upon analysis to contain only carbon and hydrogen in the proportion of C_5H_8 and to be chemically less unsaturated than rubber, and consequently to be an isomer of rubber, using this term in a generic sense. The use of 10 parts of acid, instead of 7 parts as above, produces a brittle, shellac-like derivative of rubber. Products similar to those just described but having a lower softening or remolding temperature and suitable for the production of molded articles may be prepared by utilizing 30 to 50 parts of pine tar to 100 parts of rubber in which case the amount of acid for either the balata-like or shellac-like products should be slightly increased. These products have the advantage of being lower in cost and having a tensile strength substantially equal to that of the products containing relatively small proporations of pine tar.

With Phenol

Two other examples are given; in the second rubber is mixed with 2-5-3.5% of phenol and from 3-5-4.15% of concentrated sulfuric acid and heated 6 hrs. to 140° C. The third example 2 parts by weight of pine tar and 9 parts of

p-toluene sulfonic acid are worked into 100 parts of rubber like in the first example. The products range from tough plastics to products acting much like shellac. As softeners the inventors list ceresin, oleic acid, stearic acid, nitrophenol, benzaldehyde, furfural, aldol, toluene, xylene, p-cymene, trichloroethylene, anisole and phthalic anhydride.

Combined With Fiber

The second patent is that of Harlan L. Trumbull, U. S. P. 1,708,111; April 9, 1929)filed Aug. 25, 1924). This discloses a process in which fibers like wood pulp ,sulphite pulp) are beaten in water in a paper beater and a shellac-like rubber derivative is beaten into the mixture, which is then run out into a sheet like paper on a Fourdrinier machine. On drying and heating, the plastic material fuses and binds the fibers together.

The proportions range around 80 parts of fiber and 20 parts of the shellac-like rubber derivative.

For instance 30 parts of the rubber product are treated in a colloid mill until a good dispersion is obtained which is then added to 70 parts of dry sulphite pulp which has first been beaten into a uniform suspension in a beater. The product is sheeted, dried and then compacted under heat and pressure.

Properties of Products

Products prepared as above have a specific gravity ranging from 1.2 to 1.35, a tensile strength of approximately 11,000 pounds per sq. in., a compressive strength perpendicular to the laminations of substantially 45,000 pounds per sq. in., and a dielectric strength of 30,000 to 35,000 volts per millimeter in sheets .04 inches in thickness. The product is superior in tensile strength and in dielectric strength to vulcanized fiber compositions now commonly used, and is a less expensive product to manufacture. It compares favorably with the expensive dielectric compositions made from phenol-aldehyde condensation products and may in many situations be substituted therefor.

Using Waste and Scrap

The third patent covers the invention of Herbert A. Winkelmann, but is assigned to the Philadelphia Rubber Works, of Akron, Ohio. It is U. S. P. 1,709,241; April 16, 1929; (filed Oct. 28, 1927); and covers a moldable composition made from waste vulcanized rubber, petroleum oil flux and asphalt; the mixture being blown with air until a sample has a softening point of 265° F.

Example 1.—A molding composition embodying the distinctive characteristics of this invention was made by admixing 45 parts by weight of petroleum oil flux (450° F. flash point) with 30 parts by weight of asphalt (softening point 350° F.). These ingredients were heated and thoroughly admixed and 25 parts by weight of vulcanized rubber consisting of ground solid tires were added thereto and the admixture blown until sample test indicates that the admixture has a softening point of 265° F. The blowing operation was then discontinued and the resulting product when cooled was a jet-black, grindable solid, suitable for use directly in the manufacture of molded articles.

Example 2.—In making another moldable composition, similar to that of Example 1 but differing therefrom in matters of proportion, I melted together 25 parts of the flux and 50 parts of the asphalt described in Example 1 and added thereto 25 parts of vulcanized rubber consisting of ground pneumatic tire treads. This admixture was blown until a test sample thereof disclosed a melting point of 293° F. This product was very similar in its physical characteristics to the product of Example 1. Several other examples are also given.

As an example of how the producers of standard hard rubber materials are modifying their products so as to compete with the quick molding modern resinoids, the patent issued to the B. F. Goodrich Rubber Co. on an application of Harold Gray (U. S. P. 1,691,347); Nov. 13, 1928; (filed June 13, 1923), is of interest.

The principle feature is the use of larger amounts of inert fillers and the use of sufficient vulcanizing accelerator to give a one minute preliminary cure in a press. The final vulcanization is later carried out in the open on trays. Thus rapidity of production, so far as the actual molding operation is concerned is assured.

The final product is hard and has a sufficient high fusing point to compete with the synthetic resins.

Effect of Pigments

The effect of high amounts of pigment in the softening point of an ebonite is shown by the following examples.

A standard ebonite mix comprising, in parts by weight, rubber—100, sulphur—40 and organic accelerator—2 is mixed with varying amounts of pigment as shown. In the presence of the high amounts of pigment indicated, partial vulcanization may be effected in a mold in 2 minutes at 346° F. to produce a vulcanizate so set or stiffened that it will hold its shape without change while the vulcanization is completed by heating for four hours at 292° F. in open heat. This very brief period of set cure in the mold may be aptly described as "momentary" vulcanization.

Pigment	Volumes per 100 vol. rubber	Softening point of Vulcanizate ° F.
Clay	65	203
	50	192
	30	169
Asbestos	65	191
Powder	50	189
Whiting	65	189
	50	190
Gas black	50	200
	30	177

The advantage of quick set in the use of a high amount of pig-

(*Continued on page 633*)

Some Practical Ways of Using Sulphur as a Plastic

Advertising signs, novelties and inexpensive ornamental objects may be directly molded from a mixture of wood flour and finely powdered sulphur

HOW specially finely powdered sulfur may be combined with wood flour to yield a directly moldable powder suitable for the production of advertising signs and similar products that must be cheap to produce, is described by Carleton Ellis, who has obtained a patent on the product.

As described in his U. S. P. 1,699,694; Jan. 22, 1929, (filed April 4, 1925), the sulphur employed in accordance with the present invention may be the crude mineral or the refined ground sulphur or flowers of sulphur and the like. The sulphur is ground in for example a ball mill with water and a small amount of some agent which tends to aid in the production of a finely divided product, preferably in coarse dispersion. A number of substances having dispersing or emulsifying properties may be employed such as gum tragacanth, starch and the like with or without a small amount of alkali but preferably clays, particularly those of the type of bentonite.

Thus a mixture of 9 parts by weight of sulphur, 1 part of bentonite and 20 parts of water may be ground in a ball mill, and after an hour or two of such treatment the sulphur will be found dispersed through the liquid forming a yellow substance of creamy, consistency.

It is not always necessary to use water as the dispersing or suspensory medium as other liquids may be used in some cases.

In using steel molds it is highly desirable to dry the molding composition thoroughly before molding, as moisture present tends to cause staining of the molds, and in time would injure the surface of the mold considerably.

The inventor of the process here described, Carleton Ellis, has contributed many important products and processes to the plastics industry. He is also noted for his book "Synthetic Resins and their Plastics", and his many inventions in the field of chemical and oil technology.

Experiment for Comparison

In one case a molding composition was made by mechanically mixing together 40 parts of sulphur and 60 parts of wood flour. A seemingly good mixture was obtained by grinding all together. This mixture was molded between steel dies at a temperature of 130-140° C. and with the pressure of the press registering 1000 pounds. The mold was kept in the press until the sulphur was melted as indicated by a slight flow along the sides of the die. The mold was then transferred to a cold press and allowed to cool. A molded disc 2 inches in diameter and 3.4 mm. thickness was obtained. This was tested for transverse strength and was found to average 3.43 pounds per mm. The method used of testing for strength was an arbitrary one but it was used throughout the investigations and serves to give comparative results.

Example 1

A second molding composition was made by grinding sulphur, bentonite and water together in the proportions stated above (9: 1: 20) and drying to get the sulphur in a powdered form interspersed with the bentonite. 40 parts of the dry sulphur dispersion were mixed with 60 parts of wood flour. On molding in the same manner as indicated above the average strength of several samples tested in like manner was 4.73 pounds per mm. The sulphur which has been dispersed and then dried and mixed with a filler therefore has an increased strength (about 35% increase in this case).

Example 2

On the other hand if the filler is mixed with the sulphur dispersion while wet the strength is still higher. In one case 90 parts of sulphur, 10 parts of benonite and 200 parts by weight of water were ground in a pebble mill, yielding a sulphur dispersion in the form of a thin paste. Enough of this paste was mixed with wood flour to yield the proportion of 40 parts sulphur and 60 parts of wood flour. The ingredients were thoroughly worked together and then well dried in an electric oven at 90-100° C. The dried composition was molded in the manner outlined above and the strength of the samples averaged 5.56 pounds per mm., (about 62% increase in strength).

The use of dispersed sulphur as a binder in the preparation of molding compositions is of course not limited to a wood flour filler. Better results from the standpoint of resistance to water, acids and the like are obtained by using mineral fillers, particularly asbestos fibre

with which may be incorporated mica dust, terra alba and the like.

Example 3

A composition prepared with wood flour has no great water resistance and is therefore limited to such use as does not require exposure to moisture. With asbestos fibre a product can be obtained which is water resistant and considerably stronger than one obtained from wood flour. Test discs prepared as herein outlined but using an asbestos filler gave an average comparative strength of about 8 pounds.

Example 4

90 parts of sulphur, 10 parts of bentonite and 200 parts by weight of water were ground in a ball mill for 2 hours. 100 parts of this dispersion equivalent to approximately 30 parts of sulphur were thoroughly mixed with 45 parts of long fibred asbestos. The mixture was dried at 90-100° C. and then ground. The composition when pressed at 1000 pounds and a temperature of 130° C. showed in one case a strength of 9.4 pounds per mm., (about 160% increase in strength over the comparative sample first above noted).

Varying the proportion of the sulphur tends to modify the strength. With 30 per cent of sulphur the strength in one case was 7.8 pounds per mm., with 40 per cent sulphur, 8 pounds per mm., and with 50 per cent sulphur, 6.8 pounds per mm.

Of course differences in the character of the filler, amount of asbestos fibre employed and length of fibre all influence the strength. Also it should be noted that sulphur which has been melted changes on standing from one crystalline form to another and its strength varies to some extent with the degree of such change.

Example 5

A mixture made from mica dust 45.7 per cent, short fibred asbestos 5.7 per cent, long fibred asbestos 8.6 per cent and a quantity of sulphur-bentonite dispersion equivalent to 3.3 per cent of bentonite and 40 per cent of sulphur gave a strength of 5.5 pounds per mm.

Example 6

A molded article made from a composition containing equal parts of the dispersed sulphur and long fibred asbestos exposed to the weather for several weeks did not show any effect.

The use of sulphur in an undispersed form in conjunction with the dispersed sulphur is not precluded. It is possible to melt sulphur and a mineral filler for example asbestos, cool and grind, add a further quantity of sulphur in the dispersed form, dry thoroughly to a moisture content below that at which the composition would stain steel dies and employ this composition for molding operations.

One use to which the present invention is to be used is in making advertising signs. It is possible to mold signs with raised or depressed letters, trade marks and the like from the asbestos sulphur composition. Strength and durability can thus be obtained. The strength is further enhanced by molding the mixture on pressboard or pulp board. The latter may first be waterproofed in any desired manner, preferably by impregnating the molten sulphur. The board is then placed in a press, a layer of the molding composition spread over it and the hot die brought down upon the mass to cause the composition to adhere firmly to the paper board backing and at the same time embossing the letters or markings constituting the advertisement. Paper board which has absorbed at least its own weight of sulphur by impregnation with molten sulphur is satisfactory. The sulphur-containing molding composition applied to such a board may be suitably colored with pigments or dyes.

After the sign has thus been prepared any part of it may be painted for example if letters have been embossed upon the sign these may be painted in one color with the background another. Aluminum paint is satisfactory for the purpose. Ordinary varnishes do not adhere so well to the sulphurized material as coatings having a nitrocellulose base and my finished sign board therefore preferably is one which has been painted with nitrocellulose lacquer enamels.

In cases where the advertising device is not exposed to the weather or where the product is to be employed in other ways it is not necessary to impregnate the pressboard with sulphur or other waterproofing substances and under such conditions the unwaterproofed pressboard may be used as a backing or support for a thin or thick layer of the sulphur plastic, molded thereon and suitably embossed according to requirements.

Claims

Some of the claims are:

A dried composition comprising a dried dispersion of extremely finely divided sulphur and a substance of the group composed of starch, gum, tragacanth and highly colloidal clay which is capable of acting as a dispersing agent for such sulphur, which dispersion is capable of being mixed with water to again produce a dispersion, together with a filler, which composition when molded by hot pressing affords a molded article of a strength greater than that exhibited when undispersed sulphur is substituted for the dispersed sulphur.

A process which comprises wet-grinding sulphur and a dispersion-assisting substance and mixing the dispersed sulphur with a filler material and drying at any stage of acid treatment.

A dispersion comprising sulphur, bentonite and water.

You can get the complete Index for 1928, on a size to fit PLASTICS, for bindery FREE. Write in for it.

A Little Light on a Process for Molding Imitation Food Products

Cheap and readily procurable materials can be used to simulate fruits, meat, desserts and various other victuals

While not strictly in the class of thermo plastic products as discussed in our pages, the general run of inquiries received from our readers show that information of this type is much in demand.

The method herein discussed uses the natural fruit etc., to make a suitable mold.

THREE years ago (March 1926 PLASTICS, p. 87) we brought an article on the subject of Plastic Products for Food Display, covering the subject of molded imitation fruit, vegetables and other materials for display in restaurant windows, cafeterias and the like. In this connection we have had occasional inquiries as to how one should proceed to make these objects without the necessity of expensive molds, and how to avoid the sameness in appearance if the same mold is employed.

Claims Limited

While the process is not one that necessarily requires the use of thermoplastic materials, these are not excluded, although for purposes of cheapness and light weight the objects may well be made of such common materials as plaster of Paris and the like. A patent was issued about 12 years ago on this subject, and we feel quite certain that excerpts from the method described by the inventor will prove of interest. It should be noted that the patent does not prevent anyone from making such displays, provided only that he does not infringe the two claims of the patent, which are reproduced below so that the precise field preempted by the inventor will be known to those who desire to experiment along these lines.

The patent in question is that of Christian Jaeger, of New York (U. S. P. 1,212,066), and is assigned to the Plastic Art Novelty and Specialty Co. of New York. and bears a date of Jan. 9, 1917. According to the disclosure in the patent one may proceed as follows.

In the reproduction of well known articles Jaeger employs the following substances: flour, gypsum, corn starch, common salt, powdered chalk, a filling material, such as charcoal, sawdust, ground straw, paper, husks, or the like. He also employs with the above or portions of the above, a binding material comprising liquified paraffin, to which has been added powdered sulfur, carnauba wax, beeswax, stearic acid, rosin, gum dammar or gum arabic. After thoroughly mixing the main body or filler components, the liquefied paraffin with the other binder elements, is slowly poured into the mixture, while the latter is being continually stirred, until the mass is reduced to the proper consistency for casting. Oil colors are then added to produce the ground color of the article to be reproduced. The entire mass is then boiled in double boilers and poured while hot into molds. After the articles are allowed to harden they are removed from the molds and finished as may be necessary with artists' oil colors, or by dipping in a solution of paraffin, rosin, and beeswax, the finishing process being determined by the nature of the article being imitated.

When the subject to be reproduced is soft, absorbent or liable to decay, it is treated with a ten per cent. solution of formalin in alum water or with any other hardening or embalming fluid, by immersion or saturation. When thoroughly dry, a coating of shellac is applied to exclude all air. It is then left to season from three to six hours. If the subject is hard, a coating of shellac only may be sufficient. The subject prepared as above stated is then mounted or embedded in soft gysum, cement or other molding substance and a negative mold is made by the usual methods of coating with formol and applying the plastic gypsum, cement, wax, modeling clay, or plasticine. When hardened the two parts of the mold are separated and the original subject is removed and may be destroyed. Either or both parts of the mold can then be used for casting, according as to whether complete or one-sided forms are to be produced. When necessary, a positive is made from the first molds. The details of the positive are touched up or worked out with sculptors' tools and then form or sectional molds, or duplicates of the same, may be made by the usual methods.

Reproducing Fruit

For the reproducing of fruit and similar articles, it is preferable to employ the following commodities or ingredients in substantially the proportions indicated: Flour, five pounds; gypsum, one pound; powdered chalk, one-half pound; common salt, one-half pound; sawdust or other filler, three pounds. In connection with the above, a binder of paraffin sufficient to form a soft jelly is employed in which is dissolved one-quarter pound of powdered sulfur, one-

(*Continued on page 633*)

Pyroxylin as an Imitative and Simulating Material

In conclusion, the preparation of various artificial pearl products is described

By Joseph Rossman

FOR many months we have been following this interesting review, which covered all the patented applications of the versatile pyroxylin plastics. (Continued from October issue.)

Luminous Products

The steps in making luminous celluloid are described in patent 248,413 dated Oct. 18, 1881 as follows: The wood fiber or cellulose is treated in the manner usual in making celluloid by soaking it in a mixture of sulfuric and nitric acid and then grinding it, in water, to a fine pulp, after which it is pressed to express the larger part of the moisture. To the pressed pulp, which is still slightly moist, is added finely comminuted gum-camphor. Any suitable quantity of luminous or phosphorescent material preferably sulfide of calcium, in the form of powder is introduced with the camphor. The comminuted gum camphor and the luminous powder are thoroughly mixed and incorporated with the pulp by stirring by hand or mechanically, or in any other suitable manner. The mixture of pulp, camphor, and luminous powder is then subjected to powerful pressure to expel the remaining moisture, after which the pressed mass is placed in a mold and subjected to the action of a powerful hydraulic press, the mold being at the same time heated by a steam-jacket, or otherwise, by which the pulp and camphor are converted into celluloid.

Imitation Pearl

The methods employed for coating objects with a nacreous coating, particularly balls of enamel with mother of pearl or any other substance serving for the manufacture of artificial pearls consist in repeatedly dipping the objects into more or less concentrated solutions of agglutinant substances such as gelatine, gelose, cellulose, or its derivatives, resins, caoutchouc, wax and the like, such solutions holding fish scales in suspension, the scales being dehydrated when solutions of cellulosic compositions in non-aqueous liquids are used. Drying of the coated object is effected by the evaporation of the solvents in free air or in a drying appartus. With thickened solutions the number of coatings can be reduced to a certain extent but to the detriment of the quality and fineness of the coating: with liquid solutions drying rapidly, it is necessary to increase the number of layers and consequently the amount of hand work.

The process of Patent No. 1,438,395 dated Dec. 12, 1922 has the advantage of reducing the number of layers necessary to properly coat an object with a nacreous coating, and provides for a maximum rapidity of drying, and for diminution of the work of production, the operation being carried out under the most practical conditions.

The process consists in precipitating the agglutinating substance such as gelatine or cellulose from any of its solvents, which may be either aqueous, saline or alkaline, or comprise organic solvents such as alcohol, or amyl acetate if the agglutinant used is nitro cellulose or liquid chlorid of carbon for example, if the agglutinants consist of cellulose acetates or of cellulose ethers or analogous compositions. The precipitation is effected on the object itself by means of appropriate reagents.

Coating Balls

For example, an object, such as a ball of enamel, button, or the like, is covered with a cellulosic solution having a base of amyl acetate and containing dehydrated fish scale. To produce the precipitation of the nitrocellulose and the hardening of the coating without any evaporation the object is immersed in a liquid mixable with the amyl acetate such as alcohol or a liquid carburet, which is a liquid formed by the union of a metalloid or a metal with carbon. A pellicle immediately forms on the surface of the object immersed and this pellicle becomes thicker and thicker while the solvent will be diffused slowly in the reagent until complete solidification of the coating.

The same process is employed with cellulosic solutions having a base of acetate of cellulose in a liquid chloride of carbon containing dehydrated fish scale precipitation being effected by alcohol or amyl acetate.

Whatever the solution used the same result is obtained on the object to be coated provided the reagent employed is a precipitating liquid, for example alcohol for a gelatine solution.

We are quite interested to get the reactions of our readers to articles such as the above review just completed. We have already received some comments mostly favorable, and the trend appears to show that there is a considerable demand for this type of reading matter. Let us know what you think—either way.

Unusual Applications of The Resinoids

Their use in acoustic diaphragms, conduit plows, track insulation, electrical condensers, commutators and other electrical devices described

By Charles W. Rivise

CONTINUING our perusal of the unusual objects that various inventors have disclosed in their patents, we now come to a very diversified group. The previous article appeared in the October issue.

Many times the question arises as to whether or not the application of the synthetic resinoids to certain objects is new and patentable. The ordinary type of novelty search, as usually made by going through the files of issued patents in Washington would hardly disclose the proper information, as the patents are classified according to their utilization, not according to their structure. Thus while it is easy to find the processes leading to the preparation of resins, it is very difficult to locate a patent on, say, an acoustic diaphragm made from the resins.

The author's collection of United States patents in this field is unique and the patents discussed are taken from his files.

Acoustic Diaphragm

Egerton's acoustic diaphragm, as described by him in Patent 1,455,745 dated May 15, 1923, comprises a relatively stiffened coned up central portion to which may be secured one or more styli and a relatively flat yieldable edge portion and may be made of one or more layers of cotton cloth, cotton batting or muslin thoroughly impregnated with Bakelite, Condensite or Redmanol. The stiffened up portion may be made of additional layers of fabric or paper or a reenforcement or lump of Bakelite may be formed in the coned up portion in the molding. The stylus may be molded or fastened to the diaphragm through a hole in the coned up portion.

The diaphragm is suitable for dictaphones.

Another method of making an acoustical diaphragm is described by C. S. Wickes in Patent 1,213,051 dated January 16, 1917. According to this patent, a sheet of paper, fabric, blotting paper or sheet of fibrous pulp is impregnated with a reaction product of phenol and formaldehyde such as Bakelite. The impregnated sheet may be cut or stamped into disks before or after being subjected to heat and pressure and used as a diaphragm for talking machines. Annuli may be cut from the same material or from material having a different proportion of binder and filler and one or more superposed on one or both sides of the disk and consolidated therewith. The annuli may have the same or different outside diameter than the disk and may have a rectangular or tapering cross-section and the annuli may also differ in diameter. The main disk may be formed with a thin portion adjacent to the rim formed by the superposed annuli.

Inventor states that the condensation product of the rim shrinks less than the condensation product in the inner portion, which tends to stretch the central portion and produce a radial tension upon the thin vibratory portion of the diaphragm.

Using Balsa Wood

G. F. C. Houghton in Patent 1,492,982 dated May 6, 1924 suggests still another method. Balsa wood blanks are impregnated with liquid Bakelite or Condensite, dried, sprayed with cellulose mixture such as airplane dope, dipped into acetone or banana oil; layers of paper are applied to both sides and the assembly cured under heat and pressure. Pressing dies are shaped to form an annular button near centre of diaphragm and concentric therewith. A course weave fabric may be interposed between the blank and the die to facilitate the stripping operation and to impart a a roughened surface to the blank which renders it more efficient in its functions.

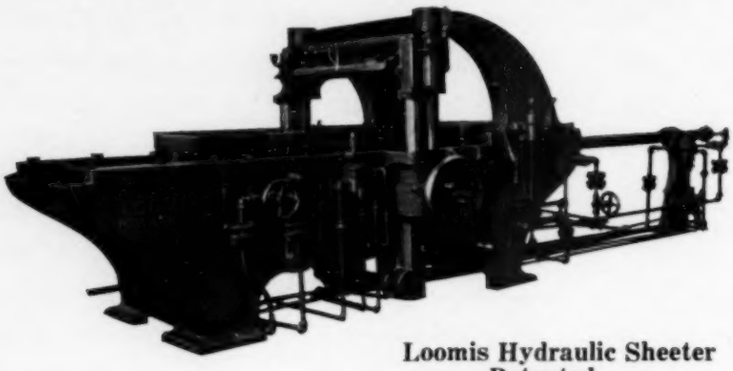
Paper Pulp Products

A feasible method of utilizing paper pulp for a loud speaker or telephone diaphragm is disclosed by J. M. Taylor of the Diamond State Fiber Co. in Patent 1,514,406 dated November 4, 1924. According to this patent the paper pulp is first mixed with iron filings, sheeted, parchmentized, impregnated with fusible condensation product and then cured under heat and pressure. Perforated iron sheets may be interposed between the impregnated paper and the assembly consolidated by means of heat and pressure.

Conduit Plow

In Patent 1,421,250 dated June 27, 1922 W. H. Kempton

FARREL-BIRMINGHAM PLASTICS MACHINERY



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Knife located midway between head bearing to prevent tipping.
Automatic reverse—Automatic lifting of knife on return stroke.

NOTED FOR ITS HIGH SPEED—Designed and constructed to resist wear

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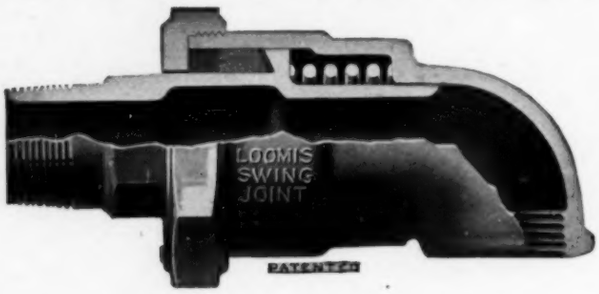

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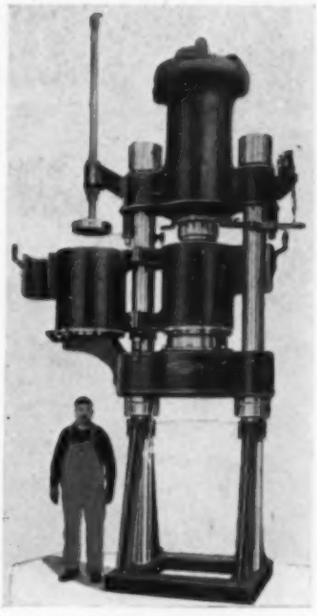

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SEMI STEEL CAKE PLATES
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CAVAGNARO-LOOMIS VACUUM MIXERS

No. 01
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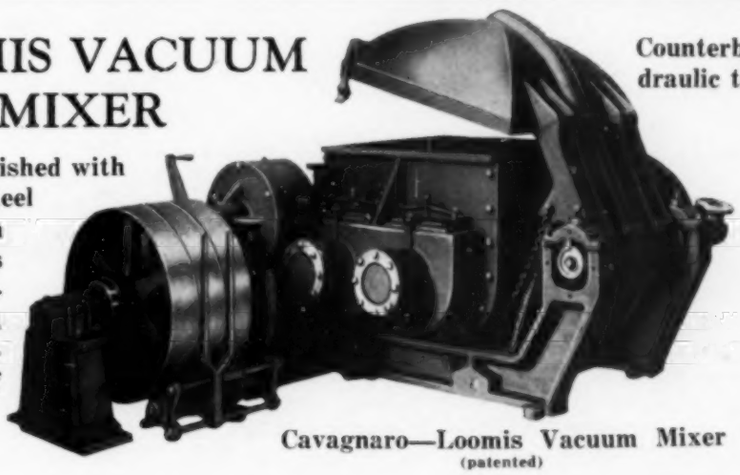
LOOMIS VACUUM MIXER

Can be furnished with stainless steel lined trough and blades which overcomes rust and discoloration of material.



Cavagnaro—Loomis Vacuum Mixer
(patented)

Counterbalanced cover. Hydraulic trough dumping.

—

Saves Power and Floor Space

—

Belt or Motor Drive

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proposes using micarta (paper or fabric impregnated with a Bakelite material) not only to insulate the conductors but also to act as deflecting means for dripping moisture. The plow consists of a body portion of micarta insulating material molded about a pair of conductors, current distributing members secured to the body portion, wear resisting plates secured to the surface of the plow and a pair of micarta deflecting members secured to the surface of the plow between the collectors and the wearing plates to protect the current collecting members from dripping moisture.

Track Insulation

Another application analogous to the conduit plow is railway track insulation. This application is suggested by J. P. Wright in Patent 1,333,526 dated March 9, 1920 in which the invention is illustrated in connection with a Weber joint. The Weber joint is made of two materials of different degrees of hardness, the harder portion being located at the point or points of greatest wear. The softer material may be vulcanized fiber and the harder material Bakelized fiber. The harder material may be in the form of rectangular, oval, elliptical, circular or irregular shaped inserts to be inserted into holes of similar outline in the softer material.

In Patent 1,392,535 dated October 4, 1921 Wm. D. Stevenson discloses a method for improving the impregnated material to render it more suitable for track insulation. A woven non-laminated body of the desired dimensions of sheet, plate or tubular form is produced by weaving cotton or wool, the weaving extending in three directions. The material is impregnated with a liquid phenolic condensation product prior to weaving, during weaving or after the weaving operation is completed. The material is passed through rolls to exclude air and the article is then consolidated by means of heat and pressure.

Electrical Condenser

Many inventors have proposed the use of artificial plastics in electrical condensers. The first of them was J. W. Aylsworth, who in Patent 1,111,289 dated September 22, 1914 suggested separating the conducting members of the condenser by means of an insulating material comprising a solid halogen substitution product of a carbocyclic hydrocarbon mixed with an ortho-cresol formaldehyde resin. The carbo-cyclic compound may be the chlorine substitution products of benzene, the tolunes, anthracene or the tri-, tetra-, or hexa-chlornaphthalene and may be oxidized.

F. S. Smith in Patent 1,422,-312 dated July 11, 1922, forms a Bakelite inclosure lined with metal around and in contact with portions of the sides of the conductor elements, providing a passageway leading from said inclosure to the exterior, charges the inclosure with a gas dielectric and then hermetically seals the passageway.

Other patents disclosing electrical condensers are Patent 1,-441,606 dated January 9, 1923 to Smith, Patent 1,497,449 dated June 10, 1924 to Kempton and Patent 1,609,222 to J. M. Taylor.

Other Electrical Applications

V. G. Apple in Patent 1,507,-566 makes a commutator brush in the following manner:—

Finely divided graphite is mixed with liquid phenolic condensation product, made into a dough, formed into a narrow strip, laid upon wire cloth made of good conducting metal such as copper, aluminum or an alloy thereof and the compound strip is rolled into a helical roll. The roll is compressed into a rectangular shape in a press; a quantity of graphite compound placed thereon and the plunger again forced down-ward to press all the graphite into and around the wire cloth. Instead of using uniform pressure, the plunger may be struck repeated blows to compress the material. Preferably sufficient heat is applied to precarbonize the binder as this hastens the hardening.

C. C. Zenk in Patent 1,255,-681 dated February 5, 1918 makes a commutator of circumferentially arranged equally spaced copper segment bars having longitudinal grooves in the sides thereof, a body of Bakelite or Condensite molded about said bars and embedding their inner edges, said body having webs extending between the bars and provided with enlargements engaging in the grooves in the bars and strips of mica arranged between said bars and having their inner edges embedded in said enlargements in the Bakelite.

Current Distributors

O. F. Conklin in Patent 1,218,-596 dated March 6, 1917 makes an ignition current distributor by pressing a piece of plastic rubber against a solid body of phenol condensation product, preshaped as the body of the distributer and with contact pieces anchored therein at the desired points and subjecting the same to sufficient heat to vulcanize the rubber and simultaneously mold it into the distributer body to form a contact surface. A method of making a suitable molding composition out of which may be formed a current distributer is described in Patent 1,561,525 to R. W. Seabury dated November 17, 1925.

V. G. Apple in Patents 1,284,-551; 1,302,622 and 1,312,295 dated November 12, 1918, May 6, 1919 and August 5, 1919 respectively describes a dynamo electric machine in which the end plates are made of Bakelite.

Other Mechanical Applications

A method of making a gear, pulley, wheel, drum, cam or other mechanical element is described in Patent 1,421,231 dated June 27, 1922 by P. E. Henninger. As described by the patentee the hub of the element is of metal formed with waved ribs or grooves in its periphery. The rim is molded from a composite molding composition consisting of fibrous material and a binder such as a phenol condensation product, the fibrous material being in the form of sheets of paper or cloth impregnated with

(Continued on page 634)

The World's Recent Progress in Synthetic Resins

A complete and condensed account of patents from the most important industrial countries

By Dr. Aladin

The patents that are listed here are all of recent origin and disclose the progress realized throughout the civilized world in this field. The dates, except in case of U. S. patents, are those of application. There will be a total of over 450 patents in this review. Publication began in April, 1929.

e. Without Condensing Agents

(Continued from September Issue)

Serial No.	Patent Number and Date	Inventor or Assignee	Title of Invention	Subject Matter of Invention
119	E. P. 246,833	Bakelite Ges.	Manufacture of acid-free resinous condensation products from phenols and aldehydes.	Cf. U. S. P. 1,681,368. (No. 117)
120	E. P. 246,834	Bakelite Ges.	Manufacture of acid-free condensation products from phenols and aldehydes.	Cf. U. S. P. 1,681,369. (No. 118)
121	E. P. 247,956	Bakelite Ges.	Manufacture of pure condensation products from phenols and aldehydes.	The crude condensation products are dissolved in an insufficient amount of sodium hydroxide to form the resin salts, if necessary with the use of organic solvents. and the solutions are then treated with precipitating agents such as soap solutions whereby the resins are precipitated in the pure form in the form of a colorless powder, the impurities remaining in solution.
122	E. P. 248,726	Bakelite Ges.	Synthetic resins of the phenol-aldehyde group in pure form.	Cf. Austrian Patent 109,678 (No. 77)
123	E. P. 274,581	A. A. Drummond	Synthetic resins of the phenol-aldehyde group.	Resinous condensation products are distilled with the vapors derived from a low-boiling organic fluid such as alcohol until the distillate obtained no longer gives a reaction for phenol with ferric chloride.
124	E. P. 296,514	British Dyestuffs Corp. Ltd. (N. Strafford and E. E. Walker)	Manufacture of phenolic resins.	The phenolic resins, after admixture with fillers such as wood flour, asbestos, Fuller's earth, kieselguhr etc.. are freed from free phenol by washing with water, with benzene or the like.
125 126	Fr. P. 610,012) Fr. P. 610,013)	Bakelite Ges.	Manufacture of acid-free condensation products from phenols and aldehydes.	Cf. U. S. P. 1,681,308. (No. 117) and U. S. P. 1,681,309. (No. 118).
127	Fr. P. 612,298	Bakelite Ges.	Manufacture of pure phenol-aldehyde condensation products.	Cf. Austrian Patent 109,678. (No. 77).
128	Fr. P. 612,298 (Addn 31,625)	Bakelite Ges.	Manufacture of pure phenol-aldehyde condensation products.	Cf. Austrian Patent 109,678. (No. 77).
129	Austrian P. 107,842	Bakelite Ges.	Manufacture of pure phenol-aldehyde condensation products.	Cf. E. P. 247,956. (No. 127).
130	Swiss P. 120,532	Bakelite Ges.	Manufacture of acid-free phenolic condensation products.	Cf. U. S. P. 1,681,368 and 1,681,369. (No. 117 and 118).
131	Swiss P. 122,362	Bakelite Ges.	Manufacture of pure phenol-aldehyde condensation products.	Cf. E. P. 247,956. (No. 121).

Serial No.	Patent Number and Date	Inventor or Assignee	Title of Invention	Subject Matter of Invention
		4. Hardening		
133	U. S. P. 1,606,943	T. S. Huxham (American Insulator Corp.)	Hardening phenolic resins.	Fusible resins derived from phenols or cresols and formaldehyde, acetyldehyde or furfural by prolonged heating to 150° C., are hardened by means of condensation products made from amines such as aniline and furfural, yielding black shining resins.
134	U. S. P. 1,609,506	F. B. Bock (Bakelite Corp.)	Plasticizing artificial resins.	Soluble and fusible phenolic resins (resols) are treated in the powdered condition with up to 15% of furfural and then hardened. The final products are characterized by greater plasticity.
135	U. S. P. 1,667,675	H. V. Potter and J. W. Crump (Damard Lacquer Co.)	Hardening of phenol-urea-formaldehyde condensation products.	The resins obtained from phenol-, urea and formaldehyde in accordance with E. P. 256,711 (No. 305) are treated with acids such as sulfuric acid, phosphoric, nitric, hydrochloric or oxalic, aniline hydrochloride, phenylhydrazine hydrochloride, urea nitrate or chloramonium; the hardening taking place in the cold but more rapidly one heating. The resulating insoluble products are resistant both to alkalies and to strong acids.
136	U. S. P. 1,678,108	L. Deutsch and J. Thorn (Selden Corp.)	Manufacture of condensation products of phenols and aldehydes.	Employs casting boxes closed off at the bottom by a liquid or by an easily fusible substance such as a low-melting metallic alloy. The material is heated in the molds until it hardens to facilitate removal of the product.
137	E. P. 264,601	Damard Lacquer Co.	Hardening of phenol-urea-formaldehyde condensation products.	Cf. U. S. P. 1,667,675 (No. 135)
138	Fr. P. 622,369	Damard Lacquer Co.	Hardening of phenol-urea-formaldehyde condensation products.	Cf. U. S. P. 1,667,675 (No. 135)
139	Swedish P. 58,116	Amalith Ges. m. b. H.	Manufacture of condensation products from phenols and aldehydes.	Cf. U. S. P. 1,678,108 (No. 136)
140	Swiss P. 124,533	Bakelite Corp.	Method of plasticizing artificial resins.	Cf. U. S. P. 1,609,506 (No. 134)
		5. Utilization		
141	U. S. P. 1,500,844	A. Plauson and J. A. Vielle	Manufacture of colored resinous condensation products from aldehydes and phenols or from ketones and aldehydes.	The condensation is carried out in the presence of aromatic diazo-compounds; the products have resinous characteristics but also those of mono-azo-dyestuffs. The products may be used as substitutes for shellac and for electrical insulating materials and also for producing colored lights for fire-work purposes.
142	U. S. P. 1,519,322	J. N. Novak (Raybestos Co.)	Preparation of an impregnating materials for brake-shoes and other friction surfaces.	Asbestos or other suitable fibrous material is impregnated with an alcoholic solution of a mixture of natural resins and of phenolic resins dissolved in alkali solutions.
143	U. S. P. 1,557,730	F. S. Smith (Products Protection Co.)	Preparation of fibrous materials impregnated with phenolic condensation products.	Cords are saturated with the incipient condensation products of phenols and aldehydes, polymerized by application of high tension current, and the products are subsequently hardened in molds.
144	U. S. P. 1,560,346	C. F. Fuller (General Electric Co.)	Utilization of plastic materials.	Triphenyl methane dyes that have the property of changing their color when heated, are added to the phenolic resins. The products are used for electrical safety devices and resistances so as to indicate overheating by change in color.

Serial No.	Patent Number and Date	Inventor or Assignee	Title of Invention	Subject Matter of Invention
145	U. S. P. 1,564,774	L. F. Frederic (Fibroc Insulation Co.)	Material for the manufacture of gearing.	Suitable webbing are mixed with phenolic condensation products and 5% of graphite. The gears made from this composition require hardly any lubrication.
146	U. S. P. 1,602,249	G. L. Peakes (Bakelite Corp.)	Method of making molded phenolic insulating materials.	The finished molded products are heated for a considerable time, say from 70 to 80 hours to from 125 to 135° C, whereby they acquire very much improved dielectric properties.
147	U. S. P. 1,613,724	L. M. Rossi (Bakelite Corp.)	Preparation of varnishes from phenolic resins.	Hardening agents containing methylene groups, such as hexamethylenetetramine, formaldehyde or its polymers or higher aldehydes, are added to alkaline solutions of phenolic resins. The product serves for the impregnation of paper.
148	U. S. P. 1,613,894	J. J. Kessler	Hardening of porous substances.	Articles formed from porous substances such as wood, cement, gypsum, paper etc. are impregnated with a fluid mixture of natural resins such as rosin, copal and the like and with phenols and aldehydes or their polymers and derivatives, hexamethylenetetramine etc. The materials are then heated to from 120 to 200°C. whereby the phenol and aldehyde in the products will condense therein.
149	U. S. P. 1,637,487	F. M. Kern (to Cincinnati Grinders, Inc.)	Grinding of synthetic materials containing fibrous matter	Articles composed of such fibrous substances as wood-pulp, paper pulp, wood or the like that has been impregnated with phenolic resins in order to harden them, are ground down with the use of petroleum as a lubricating agent.
150	U. S. P. 1,638,342	J. J. Kessler	Hardening of porous bodies	The pores of the article are filled with a polymerized phenolic aldehyde resin, and the articles are then coated with either an alcohol varnish or an oil varnish.
151	U. S. P. 1,650,109	H. L. Bender (to Bakelite Corp.)	Preparing synthetic resins	In order to plasticize the phenol-formaldehyde condensation products, para-toluene sulfonamide that has been condensed with formaldehyde is used.
152	U. S. P. 1,672,538	J. N. Novak (To Raybestos Co.)	Brake lining substance	Asbestos is impregnated with a solution, in alcohol, of a fusible phenolic resin in admixture with a natural resin such as rosin.
153	U. S. P. 1,673,797	S. Brown (To Bakelite Corp.)	Preparing impregnated fabrics	Threads or string are saturated with an aqueous colloidal dispersion of a phenolic resin (made in a colloid mill); and after drying the threads are consolidated under heat and pressure.
154	U. S. P. 1,684,755	A. L. Clapp	Preparing paper or cardboard containing artificial resins	Paper pulp in the form of a thick suspension is treated in the paper hollander with a fusible artificial resin plus rosin and montan wax; whereupon the pulp is formed into paper on a standard paper machine. When dry, it can be heated under pressure to form a hard substance containing the infusibilized resin.
155	Can. P. 256,883	R. Arnot	Preparing a cement	Phenolic condensation products while still in their liquid form are mixed with molten or with liquefied glue.
156	Can. P. 260,384	H. O. Keay	Abrasive substance	A paste is made from sand, a phenolic resin, furfural and a solvent for the resin, plus alcohol.

Serial No.	Patent Number and Date	Inventor or Assignee	Invention Title of	Subject Matter of the Patent
157	Can. P. 261,953	F. P. Brock (To Bakelite Corp.)	Plastifying artificial resins	See U. S. P. 1,609,506 (No. 134).
158	Can. P. 261,954	Bakelite Corp.	Lacquer-like coating	A resinous phenol-formaldehyde condensation product is dissolved in aqueous alkali solution, whereupon furfural is added which acts both as a diluent as well as a hardener for the phenolic resin.
159	Can. P. 262,391	H. W. Matheson (Canadian Electro-Products Co. Ltd.)	Preparing varnishes	A condensation product derived from acetylene, phenol and an aldehyde is dissolved in a solvent and the solution employed as a coating or an adhesive.
160	Can. P. 265,674	G. L. Peakes (To Bakelite Corp.)	Molded phenol resin insulation	See U. S. P. 1,602,249 (No. 146).
161	Ger. P. 432,485	Dr. H. Traun & Sons	Uniting phenolic resin substances with substances consisting of other materials	An intermediate piece of hard rubber is employed, which is cemented to the artificial resin object with the use of an artificial resin of soluble type dissolved in a suitable solvent; by subsequent heating the resin is hardened and the joint made permanent.
162	Ger. P. 437,047	J. K. Wirth and Saureschutz G. m. b. H.	Fabrication of tools etc. coated with heat resistant and mechanically strong and acid-proof coatings	The articles either consists of, or are coated with an infusible and insoluble resin of the Resit type.
163	Ger. P. 466,429	J. K. Wirth and Saureschutz G. m. b. H.	Uniting plates etc. consisting of resinous materials	The various pieces of the article are united by means of a fusible resin that is subsequently hardened thus forming one single piece with the other pieces.
164	Brit. P. 200,262	W. Moeller	Neutralizing and treating skins that have been subjected to tanning agents comprising synthetic substances	The acids contained in the synthetic tanning materials or in the leather treated therewith, especially sulfuric acid, are neutralized by use of organic bases, ammonium hydroxide or ammonium salts. For instance a synthetic tanning material derived by condensation of phenol and formaldehyde, and containing about 1% of free sulfuric acid is treated with the required amount of aniline oil, heated for a short time to 80°C., and the solution is then ready for use.
165	Brit. P. 247,282	G. E. Farragut	Decorating fabrics	The fabrics are provided with a printed pattern printed with fluid or plastic hardenable synthetic resins; bronze powder is then dusted onto the material, adhering to the resinous substance, whereupon the plastic is heated to harden the same. Glass powder can replace the bronze powder.
166	Brit. P. 259,252	H. N. Copeland (To Kurz-Kasch Co.)	Molding phenolic condensation products	A material resembling the knurled effect of wood is obtained by mixing molding materials of different colors and pressing the same in such manner that the color runs together, without however completely blending.
167	Brit. P. 260,319	J. W. Wilding (To Amalgamated Dental Co. Ltd.)	Manufacture of dentures	Phenolic condensation products that have been made only with an alkaline condensing agent are suitably colored and then employed for the molding of dentures.
168	Brit. P. 263,674	J. Brunner and E. Scheele	Preserving biological specimens	Animal or vegetable specimens are immersed in viscous resinous condensation products, for example phenol-formaldehyde resins, and the latter are then hardened by heating, enclosing the specimen and preserving the same.

Technical Abstracts Section

A Concise Review of Patents and Literature

Pearl Essence. French Patent No. 636,627; Oct. 18, 1926. P. Chestakoff.

Aqueous "essence D'Orient" is mixed with a little alkali salt of sulforicinoleic acid, or of the sulfonic acids from naphtha refining, or sulfonated octahydroanthrancene, or other dispersing agents. To the mixture thick collodion or a varnish in a solvent not miscible with water is added and mixed for a short time and water is then added. By agitating very fine grains of collodion containing brilliant particles of the essence are obtained.

Cast Resinoids. French Patent No. 639,331; Aug. 11, 1927. E. Redlhammer & Sons.

The resin is introduced into the molds in a semi-liquid state obtained by pressure, so as to give after hardening a brilliance to the article. Glass or ceramic molds having a coefficient of expansion as close as possible to that of the resin are used.

Urea-aldehyde and Ketone Condensation Products. British Patent No. 290,192; May 9, 1927. I. G. Farbenindustrie, A.-G.

Examples are given of the production of condensation products from (a) glycol, urea and p-toluenesulfonamide, heated together and treated with sodium amalgam; (b) butylene glycol, urea, p-toluenesulfonamide, acetanilide and zinc dust; (c) diacetin, acetylurea, acetanilide and calcium shavings; and (d) butylene glycol, urea and p-toluenesulfonamide heated with magnesium powder. The products may be used for keeping in soft condition casein, gelatin or artificial products which swell in water, being viscous or resinous in character and soluble in water.

Testing Molded Insulation. 1928, 4,-730. H. S. in Rev. gen. des. Matieres Plastiques.

An outline of the methods recommended by the Union des Syndicate de l'Electricite and the French public services for the determination of surface resistance, transverse resistance, dielectric resistance, difference in phase angle, dielectric constant, tensile strength, bending strength, compressive strength, hardness, resistance to shock, effects of water and heat treatment. (Compare the American methods recently reviewed in PLASTICS).

Cellulose Acetate. Swiss Patent 126,-410; April 12, 1927. Verein für Chemische Industrie, A.-G.

Precipitated cellulose acetate is pressed to remove the excess acetic acid and then washed and pressed to remove wash water. An application is described in which the material is treated in band form and washed countercurrently.

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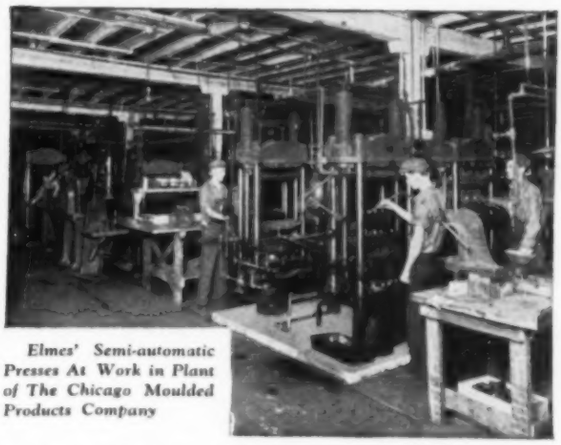
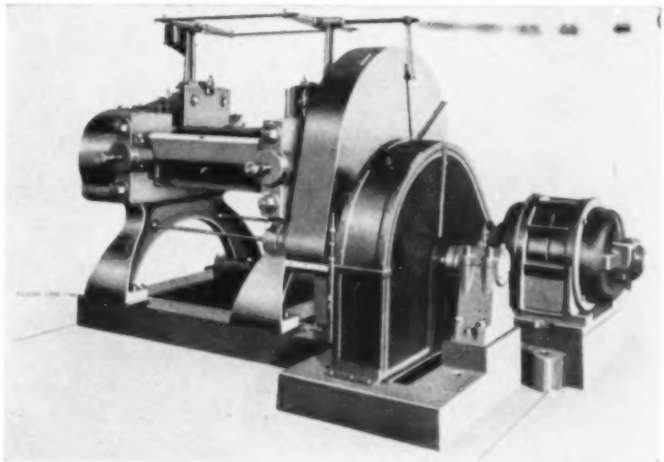


Elmes' Semi-automatic Presses At Work in Plant of The Chicago Moulded Products Company

The PRESS that Makes GREATER OUTPUT POSSIBLE with Two Pressure Four Way Single Lever Control

Charles F. Elmes Engineering Works, 1002 Fulton St., Chicago, U.S.A.

E-HYDRAULIC-ELMES PRESSES & PUMPS CHICAGO SINCE 1851



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High and Low Pressure without accumulators.

FAST, QUIET, and EFFICIENT.

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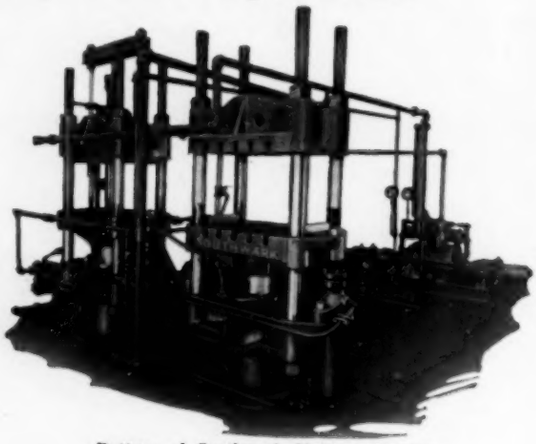

Battery of Southwark Molding Presses, operated by the Hylo Pumping Unit.

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All models equipped with pattented automatic safety pressure release to prevent jammed or smashed presses.

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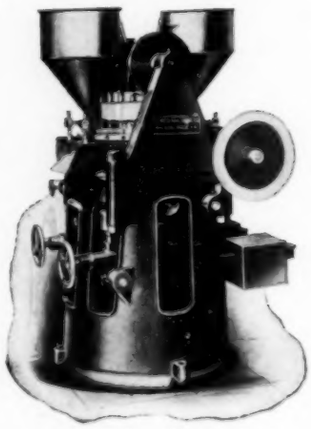

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FJS STOKES MACHINE COMPANY

Process Machinery since 1895

5934 Tabor Road — Olney P. O. — Philadelphia, Pa.

Cellulose Acetate. Canadian Patent No. 285,051; Nov. 20, 1928. H. Dreyfus and C. Haney.

Cellulosic material dried or containing from 6 to 6% of moisture is moistened with about 20 parts of a mixture containing 30 to 40% of formic acid and 60 to 70% of acetic-acid. After the desired degree of reactivity has developed the cellulose is acetylated.

Liberating Cellulose from Wood by Nitric Acid. Canadian Patent No. 284,973; Nov. 20, 1928. I. C. Farbenindustrie, A.-G.

Material containing cellulose is opened up by impregnating with dilute nitric acid at usual raised or diminished pressure. The material is then boiled in the known manner with an alkali agent to obtain a cellulose of high degree of purity. For example, small bits of wood are digested with 20% nitric acid until they are impregnated completely. The wood is then freed from excess of acid by decantation and allowed to stand until a sample is completely disintegrated, when it is boiled with dilute sodium carbonate. The opened up material is worked up in known manner by boiling it with an alkaline agent.

Cellulose Compounds. Canadian Patent No. 284,876; Nov. 20, 1928. H. Dreyfus.

In the manufacture of cellulose acetate or cellulose esters, after the acetylation or esterification is complete, the resulting product is subjected to a ripening treatment which if prolonged beyond the usual stage of solubility, for example beyond the stage at which the acetates become soluble in alcohol benzene mixtures, a gradual diminution in the viscosity takes place, so that products showing a viscosity less than 100, say 50, can be obtained, the cellulose molecule being nevertheless substantially preserved. For example, 100 parts by weight of cellulose is treated with 900 to 1000 parts of glacial acetic acid, 20 0to 250 parts of acetic anhydride, and 3 to 10 parts of sulphuric acid at an initial temperature of 0°-5°C.; this may be allowed to rise to 10° C. to 15° C., or even higher toward the close of the acetylation. When the acetylation is complete, the excess of acetylating agent is destroyed by the addition of water and the mixture is allowed to stand at about 20° C. until a product is obtained which is soluble. in acetone containing about 3 to 10% of water or more, according to the degree to which the viscosity is to be reduced. The cellulose acetate resulting from the ripening treatment above described can be dissolved in mixtures of acetone and water to form spinning solutions, containing from 10 to 25% of cellulose acetate and capable of being spun into filaments of substantially greater strength than any artificial filaments previously known.

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Rubber Products

(*Concluded from page 618*)

ment in an ebonite is clearly shown by reducing the pigments in the above mixes to the usual mold cures are found to be soft and full of blow holes after a 5 to 20 volumes, whereupon the product being entirely unsuit- two minute cure at 346° F., the able for further vulcanization in open heat.

Clay as the inert pigment is especially advantageous not only because of its low cost but because of the very high softening point which results from its use.

Food Displays

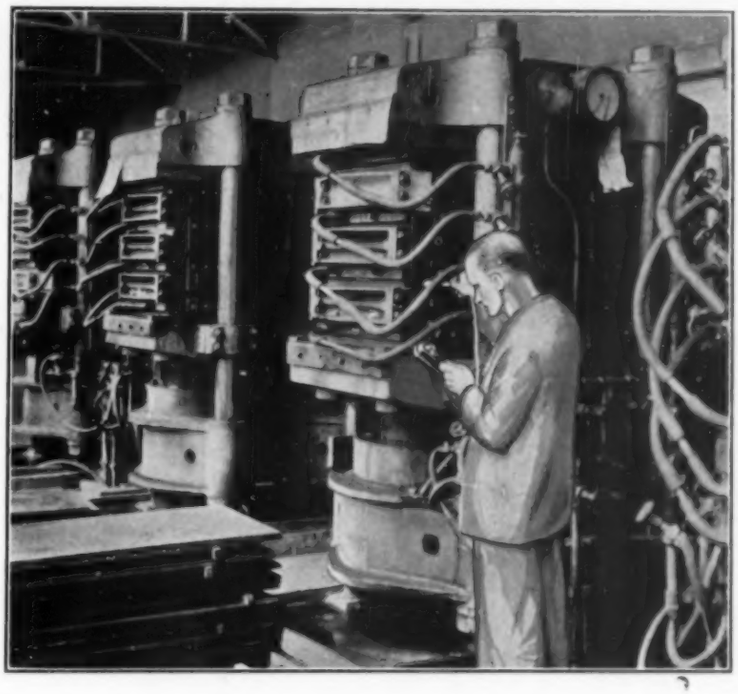
(*Continued from page 621*)

quarter pound carnauba wax, one-quarter pound beeswax, one ounce rosin, two tablespoonfuls gum arabic. For a fine texture there may be added one-half pound stearic acid. Oil colors are added according to the desired color of the article to be reproduced. For pastry, meats, and articles of coarse textures, part of the flour is replaced by with corn starch and the amount of filler is increased. For candies and confects less flour and more gypsum is needed.

Imitation Cigars

In the making of imitation cigars to be displayed in boxes in tobacconists' windows or showcases, the following formula will do: — flour, two pounds; gypsum, five pounds, sawdust or other filler, three pounds, and a liquid paraffin binder in which is dissolved one pound sulfur, one pound carnauba wax and two tablespoonfuls gum dammar mixed to a thin liquid.

For making imitation ice cream, the following should be used: flour, two pounds; corn starch, six pounds; table salt, two pounds, all mixed thoroughly with liquid paraffin in which a little rosin has been dissolved to the consistency of a soft dough. The mass is then form-



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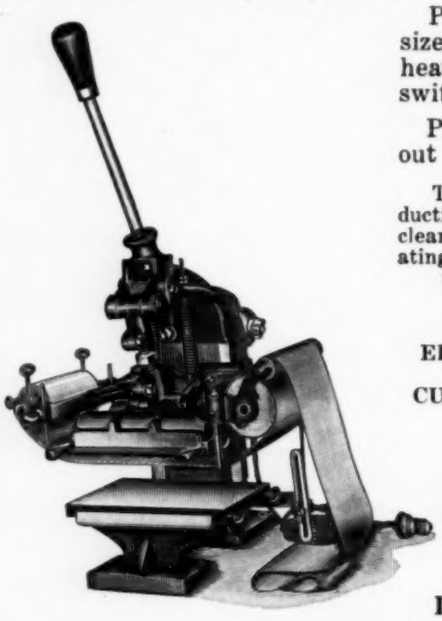

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ed in bricks or cast in suitable molds such as sherbet dishes.

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2. The herein described composition of matter for making imitation food or other products, comprising a bulky mass of flour, gypsum, and sawdust, a binder comprising a solution of sulfur, carnauba wax, beeswax, and a resinous material in paraffin, and suitable coloring matter.

Unusual Applications of Resinoids

(*Continued from page 626*)

the binder or in masses of loose fibres mixed with binder in solution or dry powdered form or made from laminated stamped impregnated annular blanks.

A drum to be used as a vulcanizing support for cables, cords, tubing and coated wires is described by C. F. Obermaier in Patent 1,114,798 dated October 27, 1914. Bakelite in plastic condition compounded with suitable fillers such as asbestos is applied to a metallic drum; a helical groove is suitably formed therein and the device is subjected to heat to cure the plastic mass. The grooves are made equal to one half the diameter of the cord together with the insulating material which is to be vulcanized thereon.

Fan or Blower

W. H. Kempton in collaboration with O. F. Rowe in Patent 1,430,561 dated October 3, 1922 makes a fan or blower from im-

pregnated sheet material. The sheet material such as paper, cloth or cotton batting is impregnated with a phenolic condensation product in solution; dried and stamped into single or multiple-bladed fan blanks either before or after being stacked to form a body of desired thickness. The blank is assembled with a steel bushing and the assembly is molded with a mixture of wood flour or comminuted asbestos and condensation product to form an ellipsoidal shaped hub.

Internal Combustion Engine

C. DeLukacsevics has done considerable work in adapting phenol resinoids for use in internal combustion engines. In Patent 1,377,898 dated May 10, 1921 he describes a four cylinder engine employing stepped pistons in which the body of each piston is made of Bakelite covered with sheet mica embedded in the Bakelite when molded, for the dual purpose of preventing the excessive overheating of the Bakelite and providing an anti-friction surface. The top and adjacent side of the pistons are provided with cast iron inserts for receiving the wrist pin. The pistons may be reenforced with intersecting ribs. In Patent 1,377,899 dated May 10, 1921 DeLukacsevics and E. Loffler go a step further and propose making both the connecting rods and the crank case of Bakelite. The piston construction embodies metal piston head inserts and an intermediate interiorally threaded metallic insert embedded in a connecting rod of Bakelite, each head being formed with a grooved stem and annular flange for embedding the piston head into the plastic. The Bakelite crank case has guide rail inserts of tool steel embedded therein.

How washing machine impellers, filtering media, steering wheels, etc., are made will be described in the next portion of this review.

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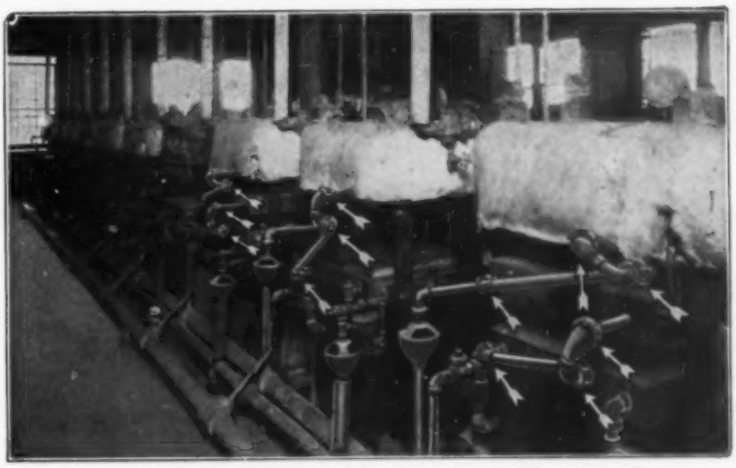

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Technical Abstracts

Cellulose acetate for wire insulation. Edmund B. Wheeler, N. Y. U. S. P. 1,689,311; Oct. 30, 1028; assigned to Western Electric Co.

A wire conductor is fireproofed by a covering consisting of finely divided selenium and cellulose acetate.

Mica Insulation. British Patent, 288,-260; April 5, 1927. J. M. Coffey.

Mica flakes are agglomerated by a condensation product of glycerol and phenol or its homologs (which may be used in alcohol solutions). Details of manufacture and use of the condensation product are given.

Phenolic Resins. British Patent, 288,-228; April 6, 1927. Kunstharzfabrik Dr. F. Pollak Ges.

"Dispersively acting substances" such as gum arabic, saponin, tragacanth, dextrin, gelatin, casein or other protective colloids, are added to the condensation solution before ro at the moment of condensation. The condensation product forms in finely divided condition and assumes a pulverulent character on heating, without forming a solid cake. By pouring this emulsion or suspension into water or solutions of salts or acids, or by cooling it, a pulverulent cake is formed. Various aldehydes may be used and considerable quantities of condensing agents preferably are employed.

Aminoplastics. British Patent, 288,-346; Oct. 1, 1926. I. G. Farbenindustrie, A. G.

The condensation is effected in an acid solution continuously maintained at a hydrogen in concentration between 4° and 6°, and the water is then removed at a temperature not exceeding 50° C. while a hydrogen ion concentration between 6.0 and 7.0 is maintained. When less than two molecular proportions of formaldehyde is used for each molecular proportion of urea, the evaporation stage may be wholly or partly dispensed with and the condensation product may be separated by cooling the solution, preferably while adding salts such as sodium sulphate or sodium chloride. Plasticizers, cellulose esters or ethers and other substances may be admixed with the products. Sodium phosphates may be used as buffers.

Glass-like product. French Patent, 637,051; Oct. 20, 1920. H. Spindler.

An organic glass is prepared by the action of carbon monoxide on ammonia at high pressure and at a temperature of 150-400° in the presence of a satalyst such as iron, nickel, cobalt, copper, or their compounds, to produce formaldehyde and urea, which are then combined in the usual way.

Laminated Glass. British Patent 288,782; Feb. 24, 1927. H. Mallabar and Noninflammable Film Co.

The surfaces of glass to be united are first coated with a layer of gelatin, which when dry is softened and the sheets are then united by pres-

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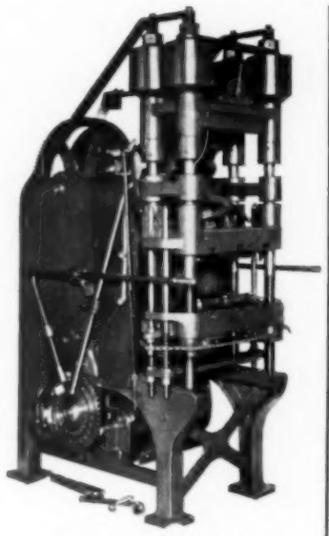

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sure. A blue dye must be used to neutralize the yellow tint of the cellulose acetate used to unite the sheets of glass.

Indurating Casein Solids. French Patent, 637,157; Nov. 2, 1920. Societe Industrielle des Matieres Plastiques.

Casein is hardened in the mass to produce a homogeneous artificial horn of any thickness by soaking softened casein in the cold with the necessary quantity of formaldehyde, or other substance yielding it, in the presence of a swelling agent and an agent preventing the formaldehyde from reacting in the cold, and then heating under pressure. In an example casein is mixed with formalin, alcohol and sodium hydroxide and heated under pressure to 95-100°.

Plasticity and Solubility of Cellulose Esters. Fifth Colloid Symposium Monograph, 1928, 243-52. S. Sheppard, E. Carver and R. Houck.

The nature of solvents for cellulose esters in relation to their influence on plasticity without, however, touching on their relationship between mechanical structure and plasticity is discussed in considerable detail.

Cellulose Nitrate. Fifth Colloid Symposium Monograph, 1928, 273-86. J. Craik.

Nitrating, denitrating, and "nitrating-up," with the results on the solubilities of the cellulose esters are discussed, while cellulose nitrate containing 12% of N is soluble in ether-alcohol, 8% and 13% cellulose nitrates are not. Nitration on the surface with a soluble or insoluble derivative determines the solvency behavior of the product. The results are consistent with the view that there are three cellulose nitrates.

Organic Cellulose Esters. British Patent 288,657; Oct. 8, 1926. British Cellanese, Ltd. H. Dreyfus and C. Haney.

Cellulosic materials such as unmercerized cotton or alkali-treated wood pulp are rendered more easily esterifiable by treatment with small quantities of liquid formic acid preferably of 70-90% strength and by using 10-20% of the acid it is not necessary to remove residual acid before acetylation or other similar esterification to form organic esters.

Cellulose Acetate. French Patent, 639,110; Aug. 5, 1927. I. G. Farbenindustrie, A.-G.

Cellulose, before acetylation, is given a preliminary treatment by passing it in the form of endless bands of paper, into glacial acetic acid.

Plastic Cellulose Ester Products. British Patent, 289,063; April 22, 1927. A. G. Farbenindustrie, A.-G.

Cellulose esters of the higher aliphatic acids which are insoluble in the usual organic solvents, and the soluble cellulose esters of such acids, which may be prepared as described in British Patent No. 283,181, and

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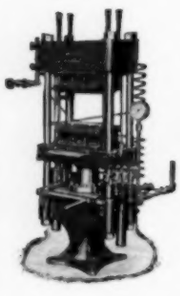

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also the mixed esters and ether-esters are formed into molded articles, coatings or the like without use of solvents by subjection to mechanical pressure while heated (suitably at 100-150°) to plastify the material. Fillers and other substances may be added for making floor coverings and various other articles.

Cellulose Ester Products. British Patent, 289,523; Jan. 26, 1927. I. G. Farbenindustrie, A.-G.

Glycerol monoformal or other acetal type compound of a polyhydric alcohol is used as a solvent, and other suitable solvents and modifying ingredients also may be added.

Cellulose Eester Coated Objects. French Patent, 637,113; July 6, 1927. C. Dreyfus.

Threads, cloth, films or other objects made of or containing cellulose acetate or other ethers or esters of cellulose or having a surface of cellulose acetate, are coated with a solution of cellulose acetate or other ether or ester of cellulose in a solvent which is not a solvent for the ester or ether in the object to be coated. Substances such as metallic powders, paints or dyes, may be added to the solution. A metallic effect is obtained by rubbing polished surfaces with oxychloride of bismuth or antimony, and covering with a transparent layer of cellulose acetate, etc., with different solubility characteristics from that of the base.

Cellulose Ester Plastics. Canadian Patent No. 285,360; Dec. 4, 1928. O. Loehr, (assignor to I. G. Farbenindustrie, A.-G.)

Soft and pliable masses are manufactured from cellulose esters, in particular nitro- and acetylcellulose, by incorporating with the cellulose ester an ester of a polyglycol or of a monoalkyl or aralkyl ether thereof or a mixture of such compounds. 100 parts of nitrocellulose together with 50 parts of a mixture of the benzoic esters of polyethylene glycol monoethyl ethers (boiling between 315 and 355°) is dissolved in 300 parts of butyl acetate, 150 parts of alcohol and 150 parts of benzene. The solution, on pouring out and evaporating the solvent, yields a film of excellent properties. The product is suited to the manufacture of artificial masses, lacquers, artificial leather and the like.

Cellulose Acetates. Canadian Patent No. 284,877; Nov. 20, 1928. H. Dreyfus.

Cellulose acetates are produced by preheating cellulosic material with a formic acid, freeing the material from the same and then acetylating substantially in absence of liquid solvents and diluents, as benzene, by subjecting them in presence of a condensing agent, as sulphuric acid, to the action of vapors of the acetylating agent, and an indifferent gas, particularly air.

Complex Cellulose Esters. British Patent No. 290,570; May 14, 1927. H. T. Clarke and C. J. Malm.

The process described in British Patent No 289,853 is modified in order to p..oduce cellulose esters con-

Aminoplastic Compositions. Canadian Patent No. 284,790; Nov. 13, 1928. Kurt Ripper, assigned to Kunstharzfabrik Fritz Pollak Ges.

A neutral or slightly alkaline mixture of 1500 parts of urea and 4000 parts of a solution containing 37.6% formaldehyde is heated for a short time in a boiler provided with a reflux condenser; 2 parts of formic acid are added and 300 parts of thiourea is introduced into the mixture by portions, and the heating of the mixture is continued for about 1 to 1.5 hours. Then about 2 parts of a fixed alkali is added and the mass allowed to cool. After a short time a white resinous product will begin to be precipitated. This product remains unaltered for an extended period of time. For the purpose of perfecting the precipitation, preferably 2000 parts of water may be added and well mixed with the resin. The purified resin can be utilized for making lacquers or hard artificial masses. Instead of 300 parts of thiourea, 200 parts of phenol may be added and the operation be continued as above. In this way a soft, kneadable resin is generated which may be utilized for making glass, clear, transparent artificial masses. Instead of 300 parts of thiourea, 230 parts of urea may be added. The final product obtained therefrom resembles milk glass.

Resinoids from Substituted Amines. British Patent No. 290,327; Jan. 15, 1927. R. Arnot.

An aldehyde such as formaldehyde is condensed with at least one organic compound containing an amino group (in which one or both hydrogen atoms may be substituted) and with at least one other organic compound, such as an organic acid or salt, a phenol or a naphthol. At least 5% of the total is used of each reagent. Examples are given of the use of urea, thiourea and substitution derivatives, salicylic acid, o-and p-toluidine, aniline, beta naphthol, alpha and beta naphthylamine, benzidine, gallic acid, cresol and similar compounds, in various combinations. In some cases, albumen or the like may be added to the product to form an adhesive mixture.

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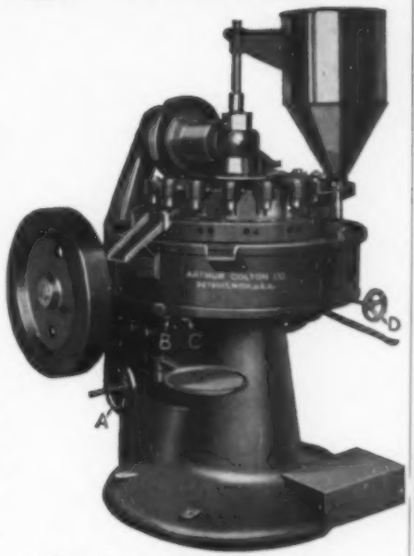

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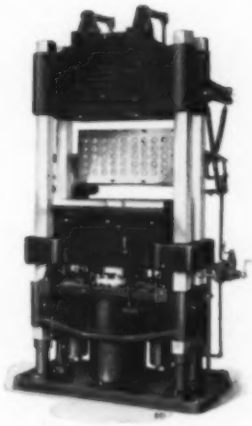

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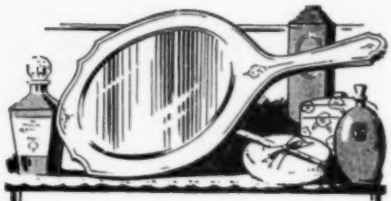

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MOLDED PRODUCTS

Devoted to the purchase, further use and merchandising of all manner of molded parts

Vol. 3 **NOVEMBER, 1929** **No. 11**

Molders Present Trade Rules To Federal Commission

Three day session in Washington devoted to Final Formulation of Trade Practice Rules and Generic Name

AFTER several years of discussion and at least two previous attempts to formally organize, the Molding Industry, acting under the auspices of the Molded Insulation Section of the National Electrical Manufacturers Association, offered for approval to the Federal Trade Commission a set of resolutions which are to be the basis for fair business tactics in the industry. The resolutions were presented before the chairman of the Commission, Mr. Edgar A. McCullouch on Thursday, October 10th, the last of a three day session at the Wardman Park Hotel in Washington, where the annual NEMA convention was held.

An all-day discussion of the Section took place on Tuesday, October 8th at which these rules were whipped into shape for presentation. Several paragraphs were stricken out for various reasons but complete agreement was reached on the form that was presented to the commission. Member companies and their representatives present at this preliminary discussion were:—

E. V. Schlesinger and C. A. Kurz Jr., re-elected respectively secretary and chairman of Molded Insulation Section of NEMA.

Northern Industrial Chemical Co., Mr. Schlesinger.

Kurz-Kach Co., Mr. Kurz.

American Insulator Corp., Mr. Huidekoper.

Mack Molding Co., Mr. Kendall, Mr. Howell.

Boonton Rubber Co., Mr. Post.

Reynolds Spring Co., Mr. Rossiter, Mr. Austin.

Recto Mfg. Co., Mr. Backscheider.

Connecticut Molded Prod. Corp., Mr. Coleman, Mr. Grote.

General Electric Co., Mr. Randall.

Garfield Mfg. Co., Mr. Geo. Walker.

Union Insulating Co., Mr. J. H. Parker.

Chicago Molded Products Corp., Mr. Bachner.

Others present were:

Mr. Clarkson, **NEMA.**

Shaw Insulator Co., Mr. F. H. Shaw.

Norton Laboratories, Mr. Neal.

Mr. Gilmore, Mr. Klein, **Plastics and Molded Products.**

Mr. Dent, General Plastics, Inc.

The text of the Trade Practise Rules for the Molding Industry as submitted to the Federal Trade Commission for approval is as follows:

1. Inducing Breach of Contract:

Inducing or attempting to induce a breach of contract between a competitor and his customer during the term of such contract is an unfair method of competition. Whenever notice of the existence of a contract is brought to the attention of any person in any way he should promptly discontinue all efforts which might induce the contracting party to break such contract.

2. Misbranding:

The false marking or branding of products of the industry with the effect of misleading or deceiving purchasers with respect to the quality, quantity, grade or substance of the goods purchased, is an unfair trade practice.

3. Fraud and Misrepresentation:

The sale or offering for sale of any product of the industry with misrepresentation calculated to deceive customers or prospetctive customers as to the quantity, quality, substance or size of such product, is an unfair trade practice.

4. Secret Rebates:

The secret payment or allowance of rebates, refunds, credits or unearned discounts, whether in the form of money or otherwise, or the giving of premiums, or extending to certain purchasesr special service or privileges not extended to all purchaser special service or priviconditions, is an unfair trade practice.

5. Costs—Selling Goods Below Own Cost:

The selling of goods below own cost for the purpose of injuring a competitor and/or with the effect of lessening competition is an unfair trade practice.

6. Prices—Adherence to Published:

Whereas, it is the general practice of manufacturers of molded products to issue price schedules from time to time, such schedules presumably representing their selling prices on given quantities for shipment to the destination or territory indicated, while as a matter of fact, in many instances the sole purpose of sending out such schedules is with the idea of gathering in such orders as may come from the unwary buyers and trusting customers, at the same time making secret prices to favored buyers and competitors' customers in the way of rebates and supplying certain items at cost or less, special cash discounts and gifts and many other unbusinesslike methods in order to effect the sale end.

Whereas, such practices are discriminatory as between purchasers and encourage dishonesty on the part of salesmen and the public, and should be condemned by other reputable merchants, therefore,

BE IT RESOLVED, that the members of the molding industry while maintaining absolute freedom in the issuance of price schedules from time to time, in conformity with the established trade practices, do adopt as a cardinal principle that there shall be no discrimination as between purchasers of like amount and conditions in the same territory and that where published prices are issued by any member, same shall set forth plainly the price and terms and conditions, and that such published prices shall truly represent the sales price in all cases where the goods sold and the quantities and conditions and terms are set forth in the consignor's current price schedule, and any deviation from the principle expressed herein shall be deemed an unfair trade practice.

7. Competitor, Enticement of Employees by:

Interference with a competitor's business through the enticement of employees from his employment is an unfair trade practice.

8. Competitor, Defamation of, or Disparagement of His Goods:

The defamation of a competitor by words or acts imputing to him dishonorable conduct, inability to perform contracts, or questionable credit standing or the false disparagement of the grade or quality of his goods, is an unfair trade practice.

9. Uniform Contracts:

RESOLVED, that in order to protect principles of these rules a uniform sales contract and proposal form should be used in all transactions.

10. Current Price Information:

RESOLVED, that in order to protect the public from price discrimination and to inform it of current market prices of molded products, the industry hereby records its approval of the widest possible prompt publicity of all current price lists and of all notices of advance or decline in prices made by any manufacturer.

11. Piracy of Styles:

Whereas, a practice has arisen among some manufacturers of usurping the designs or styles of the products of others, and in many instances using them on inferior products, and

Whereas, such action on the part of manufacturers is wholly improper from every standpoint of fair dealing and business honesty; therefore,

BE IT RESOLVED, that the members of the Molded Industry go on record as being unalterably opposed to any piracy of designs or styles, that they condemn such action and that they will make every effort within their power to bring about the discontinuance of such practices.

12. Cost, Definition of

The term cost as used in Rule 5 shall be interpreted to include among other items the cost of raw materials, transportation, manufacturing, depreciation, depletion, obsolescence, interest charges, selling and administrative expenses. It is the judgment of this conference that all manufacturers of molded products should adopt a uniform cost system.

13. Arbitration:

The industry hereby records its approval of the practice of handling disputes between manufacturers of molded products in a fair and reasonable

manner, coupled with a spirit of moderation and good will, and every effort should be made by the disputants themselves to arrive at an agreement. If unable to do so, they should refer the matter to the Conciliation Committee of the National Electrical Manufacturers Association, as arbitration is at all times preferable to litigation with its costly handicaps and delays.

14. Violation of Rules:

Resolved, that this conference authorize the President of the National Electrical Manufacturers Association to appoint a Committee of the Molded Industry to make preliminary investigations of all alleged violations of these rules, to attempt to adjust within the industry any such alleged violations and to report to the Commission such violations as cannot be satisfactorily adjusted.

These trade rules are to be considered by the entire Federal Trade Commission, consisting of five members, some time in the near future and their decision, by law, is binding on the entire industry. Additional copies are obtainable from NEMA by writing to Mr. Clarkson, 420 Lexington Ave., New York City.

Various other matters of general interest were discussed at the Tuesday meeting of the Section. It was emphasized that the practise of submitting bids to the statistician of NEMA after a transaction had been closed and then circulating these bids to the various companies bidding brought to light valuable data, especially bearing on the statements of several purchasing agents. It was the consensus of opinion that this service was highly desirable.

Points in the Uniform Contract Plan

The matter of uniform contracts was brought up but, after lengthy discussion this was sent back to the committee which is to gather type contracts from the various companies and submit a form for a uniform contract, at the next meeting of the section, such contract to combine the points that are most desirable. These will touch on cancellation of orders, mold costs, expense of changing molds, responsibility for molds, and delivery.

Finally, Mr. C. A. Kurz, Jr., and Mr. B. V. Schlesinger were re-elected Chairman and Secretary respectively of the Molded Insulation Section for another year. In accepting, Mr. Kurz said that he hoped to deal with the Section's problems in such a manner that the other molders would join its activities. Mr. Clarkson then announced that Mr. Kurz had been elected to the Board of Governors of NEMA, a further indication of the position the Section has taken in the organization.

Accepting the invitation of Mr. Neal of Norton Laboratories and Mr. Dent of General Plastics, the Section is to hold its next meeting on Tuesday, December 3rd, at Buffalo, N. Y. Visits will be made to both plants after the meeting, and an excursion will be made into Canada for dinner in the evening. Planning further ahead, the Section accepted the invitation of Mr. Parker of Union Insulating to hold its next summer meeting at his home in Monterey, Mass., after which the Section will inspect the nearby General Electric plant at Pittsfield.

Wednesday in Washington was partly given over to sightseeing tours which included the

(*Continued on page 658*)

A Molded Beau Brummel Helps Sell Dunlap Hats

DWIGHT FRANKLIN, famed for his small statues of pirates and for his original use of miniature groups to tell a scientific story graphically in museums, has just taken his first step into commercial window display art, using plastic wood as his medium.

For Kaskell & Kaskell Dunlap, haberdashers and hatters, he has molded a miniature Beau Brummel to be exhibited in the windows of its two shops in New York, two in Chicago and one in Palm Beach. The statuette is cast in plastic wood from the original in wax, and is hand colored to show the honey-red hair, the florid face and the early 19th century finery of George Bryan Brummel, greatest of dandies. The Beau stands, long cane in his left hand, tall grey beaver hat in his right, in at attitude of insolent grace, half turning his back on the beholder, gazing with a twinkle of amused interest at a billboard hanging on a quaint wrought-iron lamp post. A card advertising hats or haberdashery can be changed at will. Only four copies were made. The original is to be exhibited later in New York.

Mr. Franklin took the facial likeness of Beau Brummel from a miniature painted by John Cook, a contemporary. Although the Beau habitually dressed in black, relying upon the superb fit and utter fastidiousness of his apparel rather than on bright colors, rich materials or costly jewelry to achieve his effects, Mr. Franklin has put him into a plum-colored tailcoat.

Women's Part in the Pyroxylin Toilet-ware Industry

By Rose Estelle Brown

Stylist, Du Pont Viscoloid Co.

In the autumn of each year the Exposition of Women's Arts and Industries is held at the Astor Hotel. The purpose of this Exhibit is to congregate from all parts of the United States women creating, distributing, or otherwise serving, who might display their wares. Also those concerns serving women in each of which there is at least one woman executive.

Each year this Exposition increases and becomes more interesting. It has grown so popular that the number of paid visitors in one week exceeds a circus attendance.

One of the most unusual exhibits reflecting a manufacturer's efforts to serve and please the women, was a display of six new designs of "Lucite" toilet-ware. Before introducing a new note in dressing table accessories the Du Pont Viscoloid Company makers of "Pyralin", employed a stylist, who not only approved the new patterns but obtained the opinions of 300 college girls and club women.

Du Pont Viscoloid Booth at the Exposition of Women in Arts and Industries, designed and presided over by Miss Brown.

But a few years ago toilet ware was bought for utility purposes only; they were made of ivory, tortoise shell and amber and had no particular decorative value. Consequently, some women still feel that to display toilet ware is not fashionable or artistic. Today, however, color plays an important part in the decorative scheme of a home and women are becoming more and more conscious of the fact that their dressing room, or boudoir, is the one room which can truthfully interpret their individual personality. The art "patois" of the Boulevard expresses the feminine point of view so aptly in "the soul of the boudoir is in the dressing table". Milady should choose the accessories for her dressing table with as much interest and precision as in choosing her most personal necessities.

Realizing that the human mind learns more easily, and lastingly, through visualization and dramatization these Lucite patterns were displayed in their appropriate boudoirs. The booth was divided into six small rooms showing the harmonious contribution of each dresser set to the dressing table, rugs, draperies, wallpaper and accessories.

One group introduced the Empire pattern in Imperial Green, gracefully feminine, charmingly reminiscent of the brilliant Napoleonic courts of a century ago. Its elegance was displayed on a painted antique ivory dressing table of Directoire period, with stool to match. Green Venetian glass bottles and amber glass lamps—copies of old-fashioned oil lamp—with a witch bowl containing real ivy completed the ensemble. The wallpaper of silver Tekko with modern diamond design, and gold rayon gauze hangings made a lovely background for this setting. Empire can also be used successfully with Colonial and Early American furniture.

Another ensemble showed the Ming pattern in Sea Jade, an authentic adaptation of the design found on a rare hawthorne blossom bowl of the famous Ming Dynasty, with the delicate subtle charm for which the art of the Orient is noted. It was most effectively displayed on a dressing table draped with beige rayon satin, with mirror top and triple mirror black which reflected the beauty of the Ming Powder Box and other accessories. A vermillion dahlia in a low smoked-amber bowl repeated the coloring of the Chinese design in the draperies. Then there was a Chinese Buddha Lamp with beige shade, and smoked-amber perfume bottles. The Ming set is equally charming and in good taste with Chinese Chippendale, and 18th century English furniture.

Then there was a Queen Anne walnut dressing table and bench against a copper moire Tekko wallpaper, which formed a perfect work of the famous Josiah Wedgwood of the 18th Century. The accessories consisting of Orrofors glass bottles, pewter vase, Sheffield silver lamp with an etched clear acetate shade, and a Royal Doulton figure. The blue and ivory brocade draperies repeated the coloring of the Wedgewood set.

Next was the Diane pattern of delicate pink with a motif of silver and gold, which accented the modern note of simplicity and authentically reproduced a classic Greek design of the 5th Century B. C., depicting Diane and the faun. The French combination of pink and blue with the modified modernistic accessories attracted considerable attention. The Kidney-shaped dressing table draped in blue rayon voile with pink trimmings had a glass top which reflected this "Lucite" set, the blue Venetian glass bottles, pewter vase and the silver lamp "Diane and the Faun". Pink, blue and silver striped wallpaper and pink rayon satin drapery completed a charming and delicate setting for the Diane set.

The popular toile drapes and French provincial powder table was used in displaying the charming design of the Watteau pattern, in Burgundy or Ivory, adapted from the famous pastoral and scenic artist Watteau of the 18th Century. Burgundy Venetian glass bottles, a French dancing figure, brass lamp with crystal prisms, and a needlepoint stool, gave the Watteau pattern its appropriate setting.

The New Orchis Pattern

The last ensemble showed the Orchis pattern of nilegreen with a painting of the Orchid flower. This set with its modern feeling was in a most appropriate setting of modern wallpaper of three tones of green, gold and yellow, green rayon draperies in three tones, a modern painted light beige dresser with black knobs, slender orchid lamps with silk shades and orchid Venetian bottles.

The rubber tile flooring of gold and black was an interesting note of harmony for all six ensembles.

With the return of the longer skirts and the general trend toward a more feminine era, the woman of today may carry the last word in fashion into her boudoir by selecting the particular "Lucite" pattern and color combination to express her personality.

TRADE NOTES

Increase in G. E. Business

ORDERS received by the General Electric Company for the three months ended September 30th amounted to $116,688,014, compared with $90,328,666 for the corresponding quarter of 1928, an increase of 29 per cent, President Gerard Swope has announced.

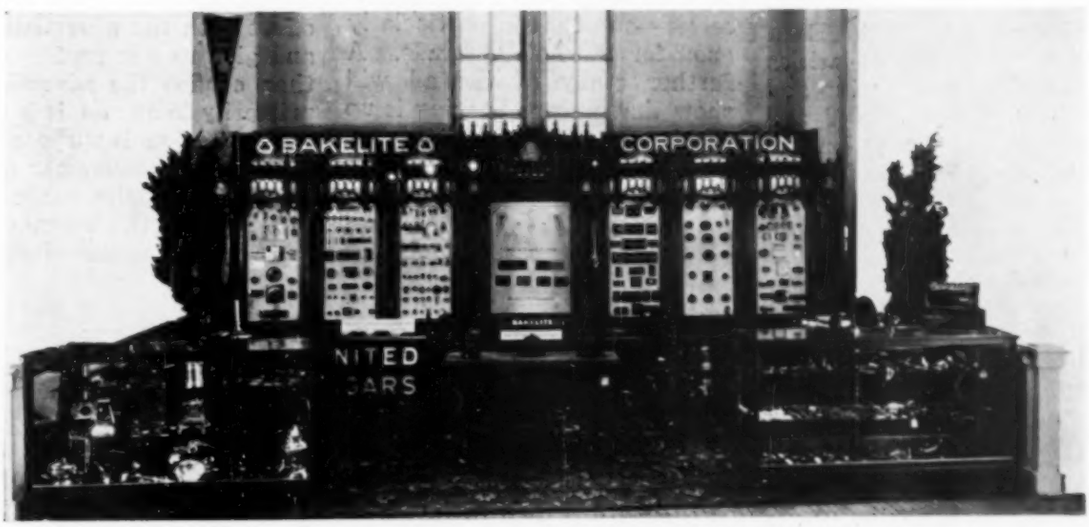
For the nine months ended September 30th orders received amounted to $337,404,470, compared with $260,686, 463 for the first nine months of last year, also an increase of 29 per cent.

New Monsanto New York Office

ON October 7th, the Eastern District Sales Office of Monsanto Chemical Works was movfrom 12 Platt Street, New York City, to new quarters at 10 East 40th Street, New York City.

The need for more space and larger warehouse facilities made this change necessary.

The new telephone numbers will be Caledonia 8260-8261-8262.



Bakelite materials at work in the various fields of electrical engineering were typified by this exhibit at the recent National Electrical Exposition at Grand Central Palace. In honor of the Golden Jubilee of the electric light, a central panel of the display showed a range of electric light bulbs with Bakelite cement. A new and interesting application of the molded resinoid material was found in the letter forms which serve as a background for the gas tubes in modern Neon and Argon display signs. Other applications ranged from Christmas tree lamp sockets to underground cable sheaths and aerial insulation.

Selling Molded Products Direct to the Consumer

Live copy and display advertising attracts single purchaser and small jobber profitably to manufacturer

By William Gordon
Gordon Manufacturing Co.

In the October issue of Molded Products, Mr. Gordon described his method for building up an organization of 'direct distributors' for his molded ash receiver. In this second paper, he outlines the manner in which he is distributing another article by a double-edged appeal. It is interesting to note that the initial molding order on this job was for 25,000 pieces. The scheme apparently works.

In the last issue of MOLDED PRODUCTS we described how we sold over one million Ash Receivers in eight months by the direct method of advertising and appointing distributors who bought these products from us for cash and in turn re-sold them at retail to consumers and wholesale in dozen lots to dealers. Since that article appeared, numerous requests have been received for additional information, and particularly that we give facts and figures.

In our previous article, we pointed out that distribution by this method was primarily a mail order business, which requires serious study and concentration before success can be attained. Proof of this statement will be brought home to you more forcibly when we point out that no set formula can be laid down and followed successfully with every product. Each product has its own peculiarities and problems of marketing and must be studied by itself and the proper distribution plan and advertising adopted for it.

Considering Possible Plans

When a sales campaign is laid out for a product, we do not overlook any possible method of distribution. These various methods—or "selling plans" as we call them—are planned and studied while the item is being prepared for the market. For example, the Lift-a-Lite Ash Receiver was purposely built to take an advertising imprint. This advertising is imprinted in gold on leather and inserted in oval on the Ash Tray. Many of our distributors are able to pick up a great many quantity orders from users of advertising gifts, which means additional profits for both of us.

We are here reproducing an ad that is running currently in salesmen and general magazines—in two colors, red and black—in back cover positions wherever this was obtainable. A study of this ad will convince you that we have an exceptionally attractive and exclusive item in the Lift-a-Lite Ash Receiver—one that is particularly good for the holiday trade. A further study of the ad will show that we are backing it up with a very good sales plan.

After studying the product and the plan it would be natural to assume that the item had sufficient merit to bring in a fair volume of returns. At least this is the opinion generally expressed by those who are in a position to know this type of selling. The question then arises as to why we have to bring in the Leather Set and feature the two articles in one advertisement. It is generally conceded wrong in principle to advertise more than one product at a time. Our principal reason for doing this is to get $3.45 with every coupon. The unit of $3.45 is sufficient to at least break even on the cost of the advertisement and in many instances will even show a profit on the face of the ad. This would not be possible if the unit of sale right from the advertisement were less.

Making the "Ad" Pay For Itself

Do not gain the impression that every ad should pay for itself at the outset. In most of our advertising we are satisfied to actually lose half of the advertising cost. This loss and our profits are made on the repeat business which follows the sending out of samples and literature in answer to inquiries. This method, however, would be too dangerous to follow with goods that have a short-lived season. In other words, our repeat period is too short to run the risk of depending on the repeat business that follows to offset both the advertising cost and give us our profit. Rather than confine the advertisement primarily to agents, it is designed for the double purpose of selling both the consumer and the agent. The sales made to the consumer on the bargain appeal of two for the price of one bring in enough returns to fully pay for the advertising, and in some cases even pay a profit on the face of the ad, so that even without repeat business there is no danger of losing money because of the short selling season for the product.

This method of advertising has not been adopted without careful forethought. It had been tested to a lesser degree the previous season and proved so satisfactory that we are this

year spending a great deal more money on this type of advertising. Right here we wish to point out that one big feature of the ad is our offer to send both products at the retail price of only one—viz: $3.45 and further guarantee that if upon receipt of the two items they are not satisfactory, they may be returned and we will refund $4.00 in cash—allowing a bonus of 55c for the trouble.

To the casual observer, this guarantee might seem dangerous, but our experience has proven that it actually pays profits in dollars and cents to embody such a guarantee, as it tends to create confidence and results in greater returns from the ad. Do we get any returns? Yes, we do. Do we actually refund $4.00 in place of $3.45? We most certainly do. What is the percentage of returns on which we refund $4.00? About 2%. We attribute about 20% increase in returns from ads to this guarantee. With an increase of 20% and returns of 2%, it will easily be seen that this policy is an excellent one to follow.

Sure Profits in Repeat Business

The first series of our advertisements on the Lift-a-Lite Ash Receiver was run in October, which is quite early to advertise holiday goods to the general public and agents. The returns on October advertising are not what they are in November and December. In fact, even with our strong guarantee and offer to send two items for the price of one, returns are not sufficient to show a profit on the face of the ad. It most likely will show about 50% loss. In other words, an advertisement which costs us $1,000.00 will take $1,000.00 in immediate returns. Assuming that 50% is profit, the loss on $1,000.00 space will be $500.00. It must be remembered, however, that agents who start now will continue to order right thru to January and this repeat business is sufficient to offset the loss on the advertising and show a profit.

Of course, when it gets late in the season, our repeat business is greatly cut due to the shortness of time. Then we must realize a profit on the ad, and we do, as at that time of the year the consumer is more widely attracted and orders are received in sufficient quantity to pay a profit on the ad. In answer to this advertising an elaborate broadside and a series of follow-up letters are prepared. Copies of this literature, etc. will gladly be sent to anyone making inquiry.

CASH IN NOW WITH THESE 2 BRAND NEW MONEY MAKERS!
LIFT-A-LITE ASH RECEIVER
JUST LIFT CAP FOR A SURE LIGHT
$5.00 VALUE RETAILS FOR $3.45
Amazing New Advertising Imprint Plan Pays Tremendous Profits Every Dealer Your Sub-Agent
Only 25 Established Dealers Net You $2500.00 Per Month
SENSATIONAL FREE OFFER!
SAMPLES OF THESE 2 BIG WINNERS for the price of only one $3.45
NEW STYLE MONEY OR KEY WALLET & LIGHTER SET
$5.00 VALUE RETAILS FOR $3.45
Our Six Tested Proven Selling Plans Lead You to the Biggest Earnings You Ever Made
READ THIS EXTRAORDINARY GUARANTEE
Rush Coupon Now for Special Offer
OLD SIZE BILLS
NEW SIZE BILLS
CLIP AND MAIL COUPON TODAY!
CHANGE AND CARD PURSE
IDENTIFICATION AND AUTO LICENSE
GORDON MFG. CO., (Desk C), 110 E. 23rd St., New York, N.Y.

Reproduction of the two color advertisement used by Gordon Mfg. Co. on the back cover of a popular magazine having national distribution.

Proposed Plastic Trade Association in Britain

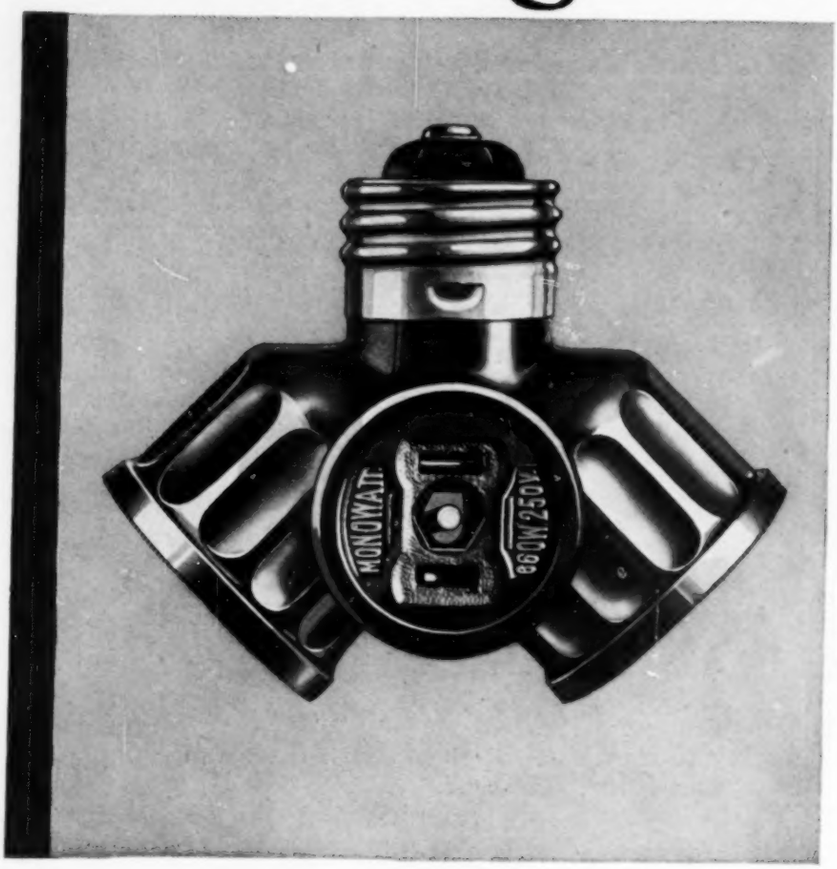
A movement is on foot in England to form a Plastic Trade Association and interested parties announce that an open meeting of the trade was held in London on October 16, to discuss the matter.

The main ideas underlying the meeting appear to be coordination and cooperation by the discussion of trade problems which it is believed could be accomplished by the formation of such an association. Those responsible for calling the meeting to decide whether an association shall be formed or not say "the proposal will be approached and decided in a spirit of broad toleration with a single eye towards the welfare of the industry as a whole."

THE directors of the Non-Inflammable Film Co., Ltd., have co-opted on the board Sir Ivor Phillips, Colonel Evatt and Major Mein as additional directors. All these additional members are on the board of Ilford, Ltd., photographic film manufacturers.

Announcing The

THE MONOWATT ELECTRIC CORPORATION, strongly financed and personneled, has purchased the Connecticut Molded Products Corporation, makers of "CETEC," and is now prepared to offer you complete service in the manufacture of *Hot* or *Cold* molded products. The main office is at Bridgeport, Connecticut, with factories at Bridgeport and Meriden, and general sales offices at New York and Chicago.



We have a modern factory and an efficient, economical set-up that can give real service. We are small enough to be versatile—large enough to take care of any job.

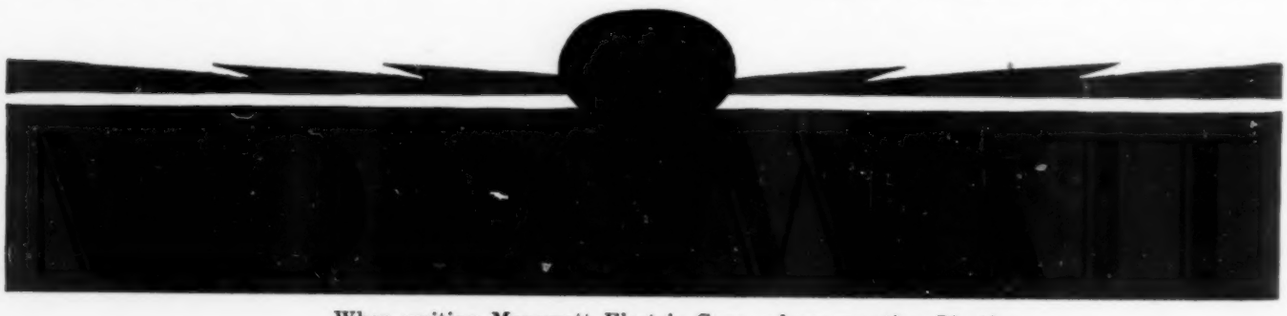
A large sum of money has been appropriated for new machinery of the latest type, much of which has already been installed.

Monowatt also features:
—a chemical staff,
—an engineering staff,
—a research staff,
—a development staff.

We can meet any specifications in Hot and Cold molding.

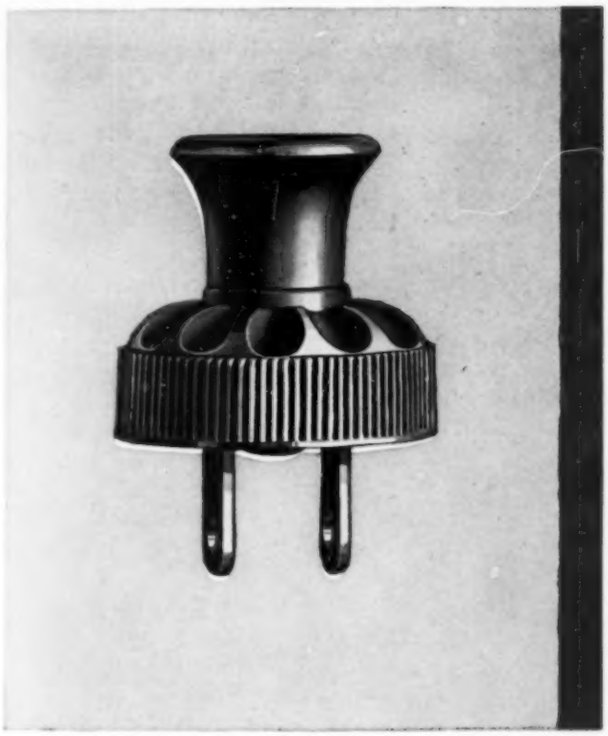
This Means Production on Time

The key to production of molded products is the tool room. We have an unusually large organization of tool makers, trained in the business—who can hop on to any job. We believe that we are very fortunate in this respect; and that we will normally be able to give better service than you can get elsewhere.



When writing Monowatt Electric Corp., please mention *Plastics.*

MONOWATT
Electric Corporation
Makers of *hot* and *cold* molded products



Precision — and precision — and precision — are the watchwords of our tool department. Things simply must be right. Excuses don't go.

Our Sales Engineers Go Anywhere—Quickly!

As service is the keystone of this business we have a strong, capable staff of sales engineers, who under our new policies will be geographically distributed to give quick action on any inquiries. The entire sales force of the Connecticut Molded Products Corporation has been retained.

Prompt Delivery

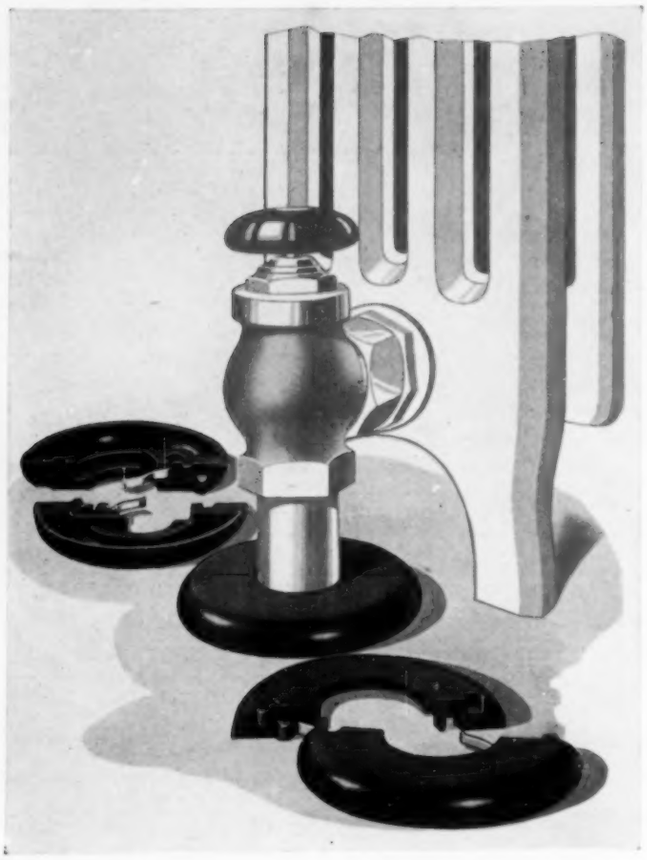
If you are interested in prompt deliveries, we suggest that you get in touch with us concerning your requirements for hot and cold molded products.

Monowatt has the capital, the facilities, the personnel to handle a large volume of business and we believe that our unusual ability to give prompt service will interest manufacturers exceedingly. We will be glad to receive your inquiries.

THE MONOWATT ELECTRIC CORPORATION
24 West 40th Street, New York
427 West Randolph Street, Chicago
Factories: Bridgeport and Meriden, Conn.
Sales Offices: New York and Chicago

Electric Corporation

When writing Monowatt Electric Corp., please mention *Plastics.*



Its a Pipe to Dress Up the Pipe With Molded Plates

LONG ago someone said, "Details make perfection, but perfection is no detail."

The Modern Utilities Company of Harrisburg realized this in the course of their work as heating specialists, and tried for a long time to improve upon the unsightly opening around steam pipes were the pipes penetrate floors, walls and ceilings. Of course, like all heating appliance men, they had used the customary metal discs slipped over the pipe ends in the course of installation. The fault with the metal discs was that they must be slipped over the pipe ends and became "gummed up" with plaster, paint, wall paper, etc., before the building was completed. If not marred in this way, they were later by the metal becoming tarnished, fly specked and otherwise unsightly.

The ingenuity of the Modern Utilities Company developed a two piece snap-on plate. Durez permitted a satisfactory material to match floor coverings and the making of a plate of permanency in respect to finish and one that would fit snugly about the pipe and closely to the floor or wall opening. The Modern De Luxe plate was brought out in oak, walnut and black Durez. Its success and demand for other colors will soon be met by the manufacturer.

The fundamental feature of the De Luxe plate is the patented snap-on spring which holds the half section of the plate snugly to the pipe and permits it to be applied after the radiators are installed. Other advantageous features, are that Durez being heat resistant will keep the plates from staining delicate wall or floor finishes! also that the material is impe' v-ious to steam and moisture and such accumulation along the pipe does not stain or mar the plates.

Metropole, Ltd., Plans Varied New Molding Enterprises

By A. C. Blackall
British Correspondent

AT the first annual meeting of the Metropole Gramophone Co., Ltd., which was recently held in London, the chairman (the Marquess of Winchester) said that the title of the company was to be changed to bring it more in conformity with its present activities. Although, at the formation as a private company, it was promoted to carry on the manufacture and sale of phonographs and records, this side of the business, important though it is, no longer represents the whole, or indeed, a large part of its activities. In the past year much time and energy has been devoted to the development of certain important industries covered by valuable patents on which the concern holds the world's rights. This is the reason for the proposed change.

The company owns the whole of the stock of Metropole Developments, Ltd., a private undertaking. Metropole Developments own just over 50 per cent of the capital of Everlite, Ltd., 71 per cent of the ordinary capital of Metduro, Ltd., 40,000 £1 fully-paid preference shares in Metduro, Ltd., and 10,000 10s. paid preference shares of Metduro, Ltd.

Metduro for Flashlights

"In handling new commercial discoveries or inventions," said the aMarquess of Winchester, "the first question to be decided as a policy is what line your first production shall take. In the caes of Metduro we are laying ourselves out to supply:—(a) The Everlite lamp container and (b) electrical requirements such as tubes, rods, and sheets for switchboard purposes. The material has been tested by the two leading testing institutions—

the National Physical Laboratory and Faraday House. Their reports serve to show that Metduro is suitable for all grades of insulation material. It can and will be made suitable in quality and price for all the various purposes for which insulating materials are used. The company is making satisfactory progress towards the attainment of commercial production.

Metduro Coated Food Containers

"Finally we come to a new industry. Through Metropole Developments, Ltd., there has been acquired an important industrial manufacturing business in Germany, with the world's rights on patented machinery for the manufacture of jointless containers in all sizes, which can be adapted for the packing of goods in a large number of trades and industries and which possess great advantages over other methods of packing. The material employed for the manufacture of these containers is a waste product readily obtainable in any country, and by means of an automatic machine this waste product is transformed by mechanical action into containers which are strong practically airtight and damp-proof, and by a simple device easily protected against pilferage. The effect of spraying these cases or containers with Metduro not only increases their strength, but renders them capable of being used for the conveyance of chemicals, acids, commercial alcohol, and other liquids. The factory premises, located on a site of 11 acres of freehold land, with excellent ferro-concrete buildings and offices, in the town of Penig, Saxony, were acquired together with a full installation of automatic plant, almost ready to commence production for the German market. The original owners spent in evolving the machine and in erecting and equipping the factory a sum not far short of £150,000 ($750,000). We have sent out a very capable engineer to take charge.

(*Continued on page 659*)

Molded Frame Utilized in Novel Neon Tube Sign

Durez in various colors supplies frame in keeping with modernity of light

THE Neon Tube has done for the sign business what talk has done for the movies, created new interest, made the story more enjoyable to the public.

The associated Claude Neon companies have developed a remarkable universal sign feature, the Crystallite display sign, a black or colored glass into which an advertiser's product or message is cut or etched. This may include the package or a floral display and of course, is limited only by the ability of the etcher. The sign is mounted in a molded frame of Durez. Black, walnut makes an excellent window piece and mahogany being the more popular colors, although the more brilliant colors are now being requested. Just inside the the frame, is mounted the Neon tube. Surrounding the plate glass, the light being transmitted through the edge of the glass to the etched letters which it illuminates beautifully. The reflection of this light in the etched features of the sign, produces beautiful effects and a most pleasing and readable message.

A special etched glass and a neon tube as a light source are the active elements in this new sign.

The standard Durez frame for this sign is sixteen by twelve; the plate glass or crystallite face being fourteen by ten.

The complete unit is rather a display than a sign, telling as it does the story of the product as well as the message of the advertiser and attractive designs have been originated for florists, shoe merchants, druggists, bankers, etc., as well as signs for nationally advertised products.

The molded Durez frame that surrounds the Crystallite sign.

The display may be used as an outside sign, either flat against a wall or as a readable message from both sides. It is mounted in a small easel and is pleasing as a daylight as well as a night sign. In addition to the selection of Durez for the attractiveness of its appearance, its weather resisting qualities were likewise a reason for its selection.

Another form of the sign, and one that is really more than a sign is the one having a recessed shelf in the center of the face. On this shelf, samples of merchandise may be displayed, attractively illuminated by the characteristic Neon tube light.

Status of German Pyroxylin Plastic Industry Is Low

Over-expansion during war and protected infant industries in new States retard recovery

By Adam Bernhard

Representative, Rhenish Rubber and Celluloid Co.

Next to the United States, Germany produces most of the world's supply of Pyroxylin materials. There are at present four or five Celluloid factories in that country, of which The Rhenish Rubber & Celluloid Co. at Mannheim probably ranks in first place.

Although Celluloid was an American invention, the Germans soon recognized its splendid plastic qualities and possibilities for its use in the manufacture of thousand different articles. Once the raw material was perfected and produced in ever increasing quantities, it was only natural that ingenious methods were invented to turn the raw material into finished products. The "blowing" of dolls, animals and other toys from sheets and also the moulding of combs are German perfections.

Pre-War Markets Closed

While the German Celluloid factories before the world war were in a most prosperous condition, they are today in a far less enviable position. The cause or causes to bring about this change are mostly the same which are responsible for the decline in other German industries. Before the war, Germany exported Celluloid and finished Celluloid articles to all industrial countries of Europe and America. The war with its consequent creation of new states in Europe, followed by the erection of high tariff walls by these new states, checked this export business to a considerable degree. New Celluloid factories which opened in other European countries, supply their own home markets and created competition at a time when the German Celluloid factories as a consequence of expansion during the war suffered from overproduction. Price cutting and underselling among the German factories were the natural consequences.

Synthetic Camphor An Aid

One remarkable progress in the manufacture of Celluloid was gained in Germany by the invention of Synthetic Camphor which at the same time was of benefit to the American Celluloid factories. While formerly the world depended on the natural camphor, produced in Japan, and of which that country holds a monopoly, synthetic camphor is now used in Germany and to a large extent also in this country. Synthetic camphor, not to be confused with camphor substitute, has in every respect the same properties as the natural product. As soon as synthetic camphor appeared on the market in 1919, the price of the Japanese camphor broke from its high level to compete with the synthetic product, and as a consequence reductions in the prices of Celluloid materials were made possible.

Domestic Market Has Simpler Tastes in Fabricated Wares

While the Celluloid consuming industry in Germany is, generally speaking, highly developed and efficient, there is hardly a market there, nor in other European countries for heavy, solid merchandise, such as made and sold in the United States. Toilet ware, for instance, is made only of thin sheeting, the mirrors and brushbacks filled with wood or cardboard. Articles made of .300" or .400" thick sheets, richly decorated, are unknown and could not even be sold in the German market. Very few people there could afford to pay $40.00 or even $20.00 for a toilet set, such as are bought in this country by people of moderate means.

Safety glass, the manufacture of which requires thin transparent sheeting is, of course, also produced in various European countries. Germany is the chief source of supply of the celluloid sheetings for these countries and it is reported that a German factory even made considerable shipments in it to one of the principal American manufacturers of safety glass.

Slight Hope for Export Expansion

Import of German Pyroxylin material into this country is rather limited, owing to a protective duty of 40 cents per lb. As a matter of fact and according to figures from the U. S. Department of Commerce, less than 1% of the total production in this country was shipped to the United States, during the year of 1927. Only certain kinds of materials, mostly special patterns and colors can be imported with some advantage in price to the importer. The Hawley-Smoot Tariff Bill does not provide for any relief in the duty rate for Pyroxylin material, but stipulates higher rates for a number of manufactured and finished articles.

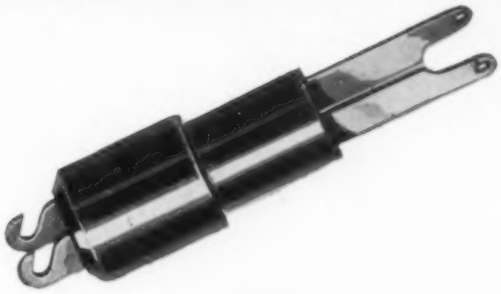
SCRANTON

The world's largest and newest-equipped moulding plants

Main offices and plant, Scranton, Pa.

Auburn Plant, Auburn, New York

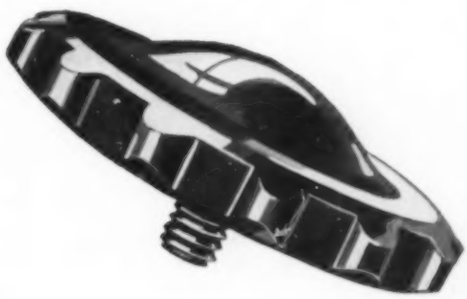
ALL INDUSTRY COMES TO US FOR PARTS MOLDED IN BAKELITE, LACANITE AND PHENOLIC



Because it is here that a strict standard of quality is maintained through each successive step in production—from mold making to finishing.

In the radio and automotive fields, Scranton Button is called upon to mold millions upon millions of pieces, each of which add to the beauty and usefulness of your automobiles and radio receivers.

For over forty years, this has been the mark of quality and service in Molded Parts. Whatever you make in which Molded Parts are required, you can place the utmost confidence in Scranton Button performance.



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Cleveland, Ohio

419 Cherry St.
Scranton, Penn.

40 Washington St
Auburn, N. Y.

The Scranton Button Co.

Scranton, Pennsylvania

Offices

50 Union Square
New York City

645 Washington Blvd.
Chicago, Ill.

114 E. Lawn Ave.
Detroit, Mich.

When writing the Scranton Button Co., please mention *Plastics*

NEWS *of the* INDUSTRY

Bakelite Corp. Expansion.

WITHIN two or three months, ground will be broken for the new Bakelite Corporation plant in Middlesex Borough near Bound Brook, N. J. The site acquired is about 100 acres, on two railroads, the Lehigh Valley and the Reading. Plans are still in a formative stage but comprehensive studies are being made of existing plants and auxiliaries so that the best possible engineering features may be combined in the new development. Tentative consideration is being given to the erection of a unit for the production of formaldehyde, for the further protection of Bakelite Corporation's customers. The phenol plant at Painesville, Ohio is to be maintained.

General Motors Radio Corp.

DETAILS of the organization of the General Motors Radio Corp., to be jointly owned by the General Motors Corp. and the so-called Radio group, consisting of the Radio Corp., General Electric and Westinghouse Electric, were recently announced. The new company will operate in the radio field under licenses of the Radio group and will manufacture sets to be used in General Motors automobiles. The Radio Corp. will continue its business as heretofore, while the new General Motors Radio Corp. will organize its business independently.

MAJOR F. A. Freeth, late manager of the Research Department of Brunner, Mond & Co., Ltd., Winnington, and Wm. Rintoul, manager of the Research Department of Nobel's Explosives Co., Ltd., Ardeer, have been appointed Joint Research Managers to Imperial Chemical Industries, Ltd., Millbank, London.

Dr. Edwin E. Slosson

THE death of Dr. Edwin E. Slosson, director of Science Service, on October 15th shocked the scientific and technical world, as well as his numerous lay readers who for many years enjoyed his clearly written expositions of complex scientific developments. With his passing, Plastics and Molded Products lost a friend and well-wisher.

Pilot and Noma Merger

PLANS were recently announced for the merging of the interests of the Pilot Radio and Tube Co. of Brooklyn, one of the largest manufacturers of radio tubes, and the Noma Electric Co., a leading manufacturer of electric lamps and other electrical appliances. This tieup is the first of a transaction that will probably involve several other companies including the New England Wire Co., The Everett Mills, Detroit Radio Products Corp. and the Tinsel Corp. of America.

General Plastics Contest Winner

GENERAL Plastics, Inc., makers of Durez, were one of the prize winners in a nationally conducted Four-page Letter Contest under the auspices of "Postage and the Mailbag". The circular and letter featured Durez collapsible tube caps. Mr. H. S. Spencer is advertising manager for General Plastics, Inc.

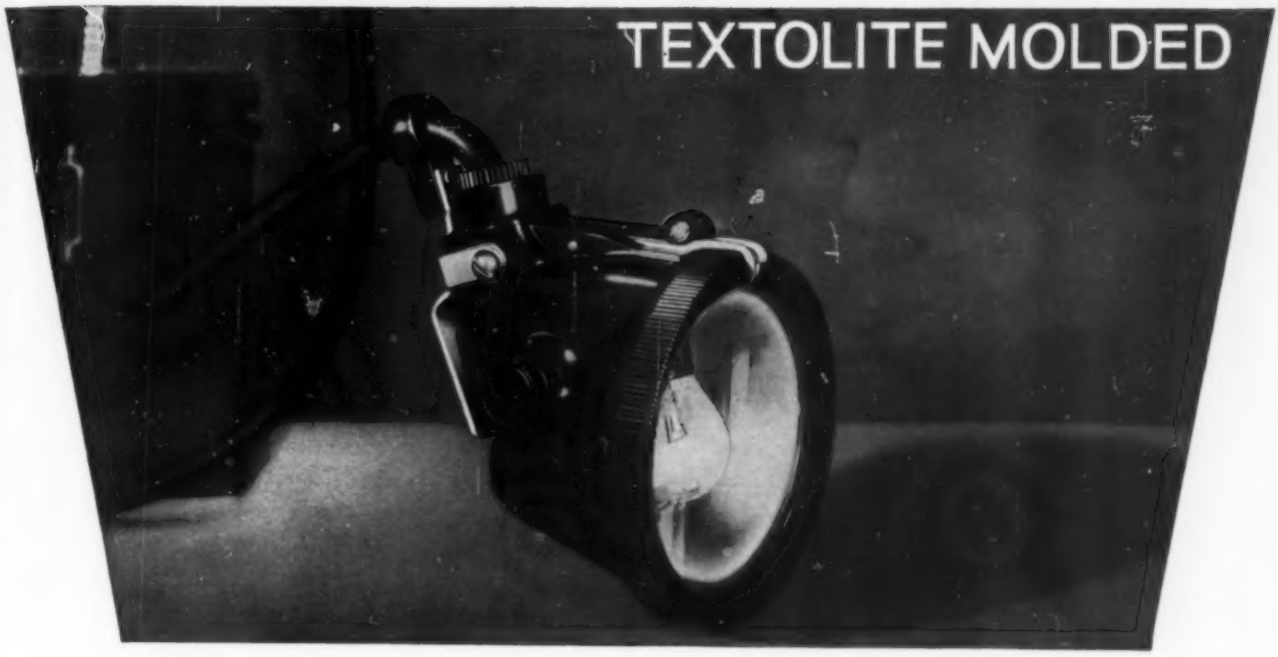
Recto Mfg. Co. Moves Plant

THE Recto Manufacturing Co., of Cincinnati, has moved its plant to a newly acquired location at Appleton Street and B & O Railroad, with double the floor and yard space they had at the old Third Street site. It is a one story building, of 18,000 sq. ft. area. Mr. Bachscheider reports that they now have seventeen presses in operation, of which seven are semi-automatic. There are nine mechanics in the toolroom.

Lipstick 'TUSSY', a product of Lesquendieu, Inc., is mentioned, in national advertising media, as being packaged in galalithe cases.

Scranton Button Co. was the only molder to have a booth at the recent radio show in New York City. And contrary to the usual reports at such expositions, they closed some new business.

MOLDED BY GENERAL ELECTRIC



"SAFETY . . . practicability . . . efficiency", the same qualities that give this miner's cap-lamp the approval of the U.S. Bureau of Mines as permissible equipment, prompted the Edison Storage Battery Co. to specify Textolite molded for the lamp housing. ¶The shape of the housing presented a difficult molding problem. ¶The solution of this problem is a tribute to the remarkable qualities of Textolite molded and to the ingenuity of General Electric technicians. ¶In this miner's cap-lamp—and in all Textolite molded products—are incorporated all the experience and technique acquired by General Electric in producing half a billion moldings. ¶Thus Textolite molded, attractive, durable, dielectric, combining General Electric's unexcelled facilities for research and for production, gives *complete* satisfaction to all users of molded parts.

885-25

JOIN US IN THE GENERAL ELECTRIC HOUR, BROADCAST EVERY SATURDAY AT 9 P.M., E.S.T. ON A NATION-WIDE N.B.C. NETWORK

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN PRINCIPAL CITIES

PLASTIC
MOLDING

Producers of the finest
in Molded Parts for
thirty-seven years

Shaw Insulator Co.
Irvington, N. J.

SHAW

When writing Shaw Insulator Co., please mention *Plastics*

German Cumarone Resin Production

THE German Cumarone Resin Cartel (CUUUUU Verband G. m. b. H.), Bochum, announces a 1928 production by its members of 6,500 metric tons, against 7,625 tons in 1927. Sales from this production amounted to 5,948 metric tons against 7,538 tons the year previous. The falling-off in 1928 sales compared with 1927 is due to lessened consumption by large users.

Prices dropped from the beginning of 1928 when they were about 10 marks per 100 kilos to a level of 8 marks at the end of the year. In certain grades of cumarone resin the price drop was less. Falling coal tar prices this year forecast an even greater weakening of cumarone resin prices.

Camphor and Balsam Imports

A perusal of the accompanying table will reveal many interesting changes in the 1929 (seven months) imports of gums, resins, and balsams. The three camphors have an increased value of over a million dollars. Balsams show a slight decrease in quantity but an increase in value. Arabic and tragacanth gums are both imported in decreased quantities but the former shows a substantial increase in value against a decided drop in the latter.

	1928 (7 mos.) Pounds	1929 (7 mos.) Pounds
Camphor		
Natural, crude	$2,712,655	$3,290,311
Natural, refined	704,191	1,102,883
Synthetic	831,060	2,557,338
Balsams, crude	264,132	237,998
Arabic or senegal	7,553,042	7,442,952
Tragacanth	1,320,880	1,302,074
Other gums and resins	5,263,793	4,284,655

Cresylic Acid Imports Increase

CRESYLIC acid imports into the United States, entered for consumption, during the first seven months of 1929 showed an increase of 36 percent over the quantity imported in the same period of 1928. Imports of unrefined cresylic acid during January-July, 1928, aggregated 6,-

458,845 pounds, increasing to 8,839,117 pounds in the corresponding period of 1929.

Imports for consumption of cresylic acid (75 per cent distilling below 215° C) more than quadrupled in the period January-September, 1929, against the same period in the preceding year. There were entered for consumption 1,222,414 pounds during the first three quarters of 1929 compared with 273,632 pounds in the corresponding 1928 period.

Monsanto Acquires Merrimac Chemical Company

EDGAR M. Queeny, President of Monsanto Chemical Works, announced today that Monsanto had acquired, through an exchange of stock and subject to ratification of the Merrimac stockholders, the business, assets and good will of the Merrimac Chemical Company of Boston, Massachusetts.

Contracts covering the purchase have been signed and ratified by the Boards of Directors of both companies and a special meeting of the Merrimac stockholders has been called for October 24th to ratify the sale.

The Merrimac Chemical Company is one of the oldest chemical companies in America, having been established in 1853. Its products number more than fifty and include chemicals for the oil, tanning, paper, textile and paint and lacquer industries.

Their plants are located in Woburn, Massachusetts, and Everett, a suburb of Boston. About eight hundred and fifty men are employed by the company.

Merrimac's assets total approximately nine million dollars and Monsanto's assets after the acquisition twenty-four million. Monsanto during the past year have acquired The Rubber Service Laboratories of Akron, Ohio, and Nitro, West Virginia, The Elko Chemical Company, the fine chemical business of the Mathieson Alkali Works and Merrimac Chemical Company.

The capital stock of Monsanto was recently admitted to trading on the New York Exchange.

THE SIEMON COMPANY

BRIDGEPORT, CONN.

An organization with 26 years of experience behind it, well qualified as custom moulders. We solicit your inquiries on

Shellac--Bakelite--Colasta

Controlling

The Specialty Insulation Mfg. Co. and The Colasta Co.

Hoosick Falls, N. Y.

The Watertown Mfg Co. **Watertown, Conn**

Expert Bakelite Molding Requires Perfect Dies, Modern Equipment, Skilled Labor

RECTO

Combines these with a knowledge of molding and an understanding of the correct way to apply this knowledge to your product.

"Remember Recto Does It---Better"

Recto Manufacturing Co.

Appleton Street **Cincinnati, Ohio**

When writing these advertisers, please mention *Plastics*

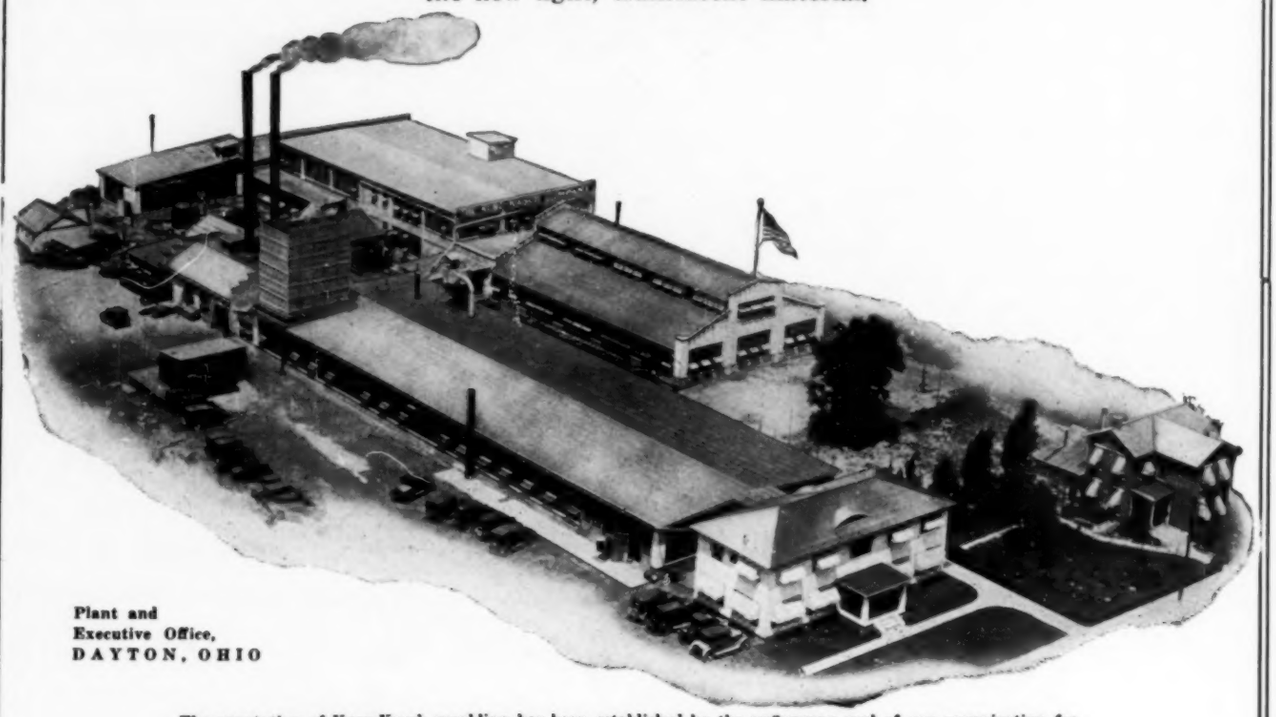
KURZ-KASCH

Plastic Moulding Headquarters

has been chosen by The Synthetic Plastics Co., a subsidiary of The American Cyanamid Co., as one of the three exclusive molders of

BEETLE MOULDING POWDER

the new light, translucent material.



Plant and
Executive Office,
DAYTON, OHIO

The reputation of Kurz-Kasch moulding has been established by the unflagging zeal of our organization for the finest results. The best materials, equipment and facilities are available, as well as ideal working conditions.

THE KURZ-KASCH CO.

Dayton, Ohio

MOULDERS OF PLASTICS

When writing The Kurz-Kasch Co., please mention *Plastics*

British Notes

AIRCRAFT instruments of all kinds in bakelite molded cases were displayed at the recent International Aero Show in London. Of special interest was the Cooke-Schilovsky turn indicator, which has seven molded parts in each instrument. Molded parts for magnetos included a distributor cover used on the winning Schneider Cup seaplane in 1927. Aviators now use transparent bakelite for oil and gasoline sight gauges, and control sticks in bright colors are also made from it.

A NEW undertaking known as Brownlac, Ltd., which has been formed to exploit the invention of a synthetic shellac, has just held its statutory meeting in London. It was stated at the meeting that a modern factory has been acquired at Twickenham, and that plant capable of producing over 50 tons per week was being installed.

THE Graesser-Monsanto Chemical Works, Ltd., has recently reorganized its sales department and has closed its Manchester branch. Captain James Luck has returned to London as manager of the advertising and general propaganda side of the business.

Molders' Convention

(*Continued from page 643*)

Senate in session and a visit to the Smithsonian Institution where the exhibits of the Bakelite Corp. and the Karolith Corp. were if interest. However, there was some serious business transacted, for about fourten of the delegates met at luncheon at the Hotel and had a round-

NORTHERN INDUSTRIAL CHEMICAL CO.

CUSTOM MOLDING

We were one of the pioneer molders of Bakelite, so it's only natural that we pride ourselves in "keeping out in front" in the industry. Our experiences, facilities, and business integrity are at your disposal --- whatever your requirements.

BAKELITE
DUREZ
*BEETLE

Selected by the American Cyanimid Company as one of the exclusive molders of *BEETLE - a new molding compound - we will be glad to show you several remarkable results in light, pastel shades.

11 ELKINS ST., BOSTON, MASS.
Established in 1908

When writing Northern Industrial Chemical Co., please mention *Plastics*

table discussion afterwards on the question of generic name and how it might be broadcast to the world at large. The word 'Synthoid' had been adopted on the previous day, on the report of the Nomenclature Committee, as being more widely representative of moldable materials rather than the prize-winning word 'Resoid' which seemed to restrict its application to resinoids.

Ideas on Generic Name

Two trends of thought came to light at the luncheon. One tended to restrict the sense of the generic word to the terms of the original competition, that is a material which sets up into a fixed unalterable form in a mold after heat and pressure had been applied. The other opinion was that the coined word should describe any synthetic material, which had undergone forming by molding under heat and pressure. In other words, a term that could be applied to the product of the molding industry, any molded article, rather than any one specific variety of moldable material. The term 'Synthoid', therefor, would describe a molded humidor as differentiated from a porcelain humidor, without specific reference to the particular material it was made out of, yet marking it distinctly as a molded product. Insufficient time prevented this question also from reaching final solution. It was referred back to the committee with instructions to submit a final program at the next meeting.

Metropole Expansion

(*Continued from page 651*)

The Metropole products have been well received in Britain, especially since the latter part of the year, when the "Piccadilly" record was introduced, which is claimed to be the best quality record obtainable at the low retail price of 1s. 6d. (36 cents). In view of present sales,

MOULDERS OF PLASTICS & BUILDERS OF MOULDS

Careful attention to minute detail is characteristic of our molding.

KUHN & JACOB
MACHINE & TOOL CO.
TRENTON ~ ~ ~ ~ N.J.

American Insulator Corporation

NEW FREEDOM, PA.

PLASTIC MOLDING

COLD MOLDED AND

PHENOLIC PRODUCTS

Sales Offices:

N. Y.: Graybar Building

Detroit: General Motors Bldg.

Chicago: 9 S. Clinton St.

New Haven: Chamber of Commerce Bldg.

When writing these advertisers, please mention *Plastics*

the directors look forward confidently to the future of this department. Negotiations with a view to exploiting the possibilities of talking films are also being undertaken. The Metropole portable recording machines having been found eminently suitable for the purpose.

During the period under review, the Metropole Gramophone Co. has formed the following undertakings: The first in September, 1928, Metropole Developments, Ltd., followed by Everlite, Ltd., Metduro, Ltd., and Deutsch Papyroplastwerke A. G.

High Standards Are Set

Everlite, Ltd., was formed in October, 1928, with a capital of £100,000. This company, after paying preliminary and flotation expenses, the purchase of patents, and payments to the inventor, amounting in all to over £50,000, holds £74,000 in cash. It has also registered and patented Everlite in 78 different countries. Regarding the history of Everlite lamps, the Marquess of Winchester said:—

"At the statutory meeting of that company, I stated that it would produce Everlite lamps by the end of April. The company did, in fact, produce several thousand lamps in that month. These were made of metal, and, after careful consideration, the directors decided to defer marketing this lamp, which was not considered the best the company could produce, until such time as they were able to make it of Metduro instead of metal. It has now produced standard cycle lamps made in Metduro, and the directors are satisfied they can offer these to the public as a cheap and reliable lamp. It is our intention to market the lamp in the autumn season, in time for the winter trade.

"I would like to enlarge on the position of Metduro, Ltd. The company acquired in March last a freehold property consisting of 24 acres of land, together with substantial and well-laid-out factories and buildings, covering about eight acres of

ground. The factory accommodation is indeed so extensive that it has been found possible to let off a portion to the Everlite Co., and the Metropole Gramophone Co. The remaining buildings are available for the Metduro Co., and are ample for its requirements. It is one of the finest factories in this country."

Ownership Statement

Statement of ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912 of Plastics published monthly at Washington, N. J., for October 1, 1929.

State of New York, County of New York, ss.: Before me, a Notary Public in and for the State and county aforesaid, personally appeared R. C. Gilmore, Jr., who, having been duly sworn according to law, deposes and says that he is the Business Manager of the Plastics Magazine and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Plastics Publications Inc., 114 E. 32nd Street, New York City; editor, Carl Marx, 114 E. 32nd Street, New York City; managing editor, R. C. Gilmore, Jr., 114 E. 32nd Street, New York City; business manager, R. C. Gilmore, Jr., 114 E. 32nd Street, New York City.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member must be given.) Plastics Publications Inc.; R. C. Gilmore, Jr., 114 E. 32nd Street, New York City; R. C. Gilmore, Sr., 114 E. 32nd Street, New York City; Carl Marx, 114 E. 32nd Street, New York City; A. K. Gilmore, 114 E. 32nd Street, New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding one per cent of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) Sylvan Hoffman, 114 E. 32nd Street, New York City.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is ..... (This information is required from daily publications only).

R. C. GILMORE, JR.
Business Manager.

Sworn to and subscribed before me this 26th day of September, 1929.

(SEAL) JAMES J. DOOLEY.

My commission expires March 30, 1930.

Form 3526—Ed. 1924.

A Molding Service THAT YOU should know about

"GOOD STUFF, QUICK—AND AT THE RIGHT PRICE." That, briefly, is what you are entitled to expect from the molder of plastics. And that exactly, is what Norloc service means to hundreds of America's foremost manufacturers—and what Norloc service offers to you.

Modern Molding facilities—an experienced personnel—and a genuine desire to serve—assure you of "good stuff, quick." And a low overhead, with a working management, is your guarantee of the "right price."

Norloc offers you a service that you will like. An experienced Engineering and Research Staff stands ready to study your problem and devise a plastic that will cut the cost of a part or product now cast, and add strength, beauty and durability to it. Or on the requisitioned molding jobs, you'll see how specialized molding knowledge is reflected in prices quoted.

But after all, the best way to know Norloc Service is to try it. Will you send us an inquiry today?

NORTON LABORATORIES, Inc.
LOCKPORT, N. Y.

Norloc

The Trademark of quality

When writing Norton Laboratories, Inc., please mention *Plastics*

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Manchester Mfg. Co.
Manchester, Vt.
Custom Molders of Novelties
New York Office:
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Telephone: Williamsburg 3872

Boonton Moulding Co.
324 Myrtle Ave.
BOONTON, N. J.
QUALITY CUSTOM MOLDING OF BAKELITE

DIEMOULDING PRODUCTION COMPANY
CANASTOTA, N. Y.
Bakelite Moulded With Engineering Service

Exports of United States Pyroxylin Products, By Countries

July, 1929

Countries	Sheets, rods, or tubes		Manufactures	
	Pounds	Dollars	Pounds	Dollars
Denmark	.....	.....	12	120
Germany	17,573	2,769	47	207
Italy	1,230	1,425	.....	.....
Netherlands	4,898	6,025	.....	.....
Spain	.....	.....	174	308
Switzerland	.....	.....	299	697
United Kingdom	162,951	60,897	13,156	11,867
Canada	113,409	81,356	24,534	41,344
B. Honduras	.....	.....	3	13
Costa Rica	215	278	.....	.....
Guatemala	.....	.....	531	1,797
Honduras	.....	.....	22	59
Nicaragua	.....	.....	116	648
Panama	35	22	395	662
Salvador	.....	.....	2	30
Mexico	312	228	6,669	9,968
Bermudas	.....	.....	17	38
Other B. W. Indies	.....	.....	50	91
Cuba	202	182	1,361	2,924
Argentina	.....	.....	2,623	2,715
Brazil	.....	.....	1,910	1,076
Chile	.....	.....	8	11
Colombia	150	180	317	1,426
Ecuador	.....	.....	32	39
Peru	.....	.....	282	463
Venezuela	1,153	1,427	30	163
Ceylon	18	21	.....	.....
Java & Madura	18	12	.....	.....
Philippine Islands	286	409	561	686
Australia	16,498	9,128	8,766	9,196
New Zealand	.....	.....	866	1,182
Union of South Africa	177	192	213	425
Nigeria	.....	.....	40	54
Total	319,125	164,551	63,036	88,209
Shipments from U. S. to:				
Hawaii	23	20	680	1,191
Porto Rico	.....	.....	448	530